Food and Agriculture Organization of the United Nations

ASSESSMENT OF THE UGANDAN COMMERCIAL TIMBER PLANTATION RESOURCE AND THE MARKETS FOR ITS PRODUCTS

Summary

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Key messages

1. *Inventory of Uganda's commercial forestry is critical for developing the sector. Although there is no formal record of the extent of commercial forestry in Uganda, in the last 15 years, over 80 000 hectares (ha) of commercial forests have been established, mainly through the Sawlog Production Grant Scheme (SPGS).*

2. *Commercial forestry actors must adopt modern processing technologies to maximize output, effectiveness and minimize waste. Poor machinery, inadequate skills and unstable supply result in low capacity operations.*

3. *The supply of timber products from pine and eucalyptus will grow exponentially in the next five to 10 years; with wood flow of pine set to increase tenfold from 200 000 m^3/ year (2020) to 2.25 million m^3/ year in 2028.*

4. *Exporting timber from Uganda will facilitate increased private sector investment in commercial forestry. There is high demand for timber in the East African region, where prices are higher than in Uganda and commercial forestry resources are less developed.*

Introduction

- Forests are critical resources in Uganda, providing numerous benefits, including the most common forms of energy; charcoal and firewood (nine in every 10 households in Uganda use fuelwood for cooking). Uganda's forest estate comprises both natural forests and commercial timber plantations, with demand for forest products from the latter, estimated at 300 000 cubic metres per year (m^3/year).
- The current demand for wood products (locally and in the region) greatly exceeds the current supply; although supply is expected to grow tremendously in the next five to 10 years. Increase in supply of forest products from commercial forest plantations in

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Uganda is attributed in part to the technical guidance and the financial assistance of the Sawlog Production Grant Scheme (SPGS), which has supported establishment of commercial forest plantations over the last 15 years.

- SPGS is a programme of the Government of Uganda, funded by the European Union, to promote investment by individuals and companies in sustainable commercial forest production through partial grants to plantation owners. FAO is implementing Phase III of SPGS, among whose objectives is to address a critical gap in the forestry value chain- the development of knowledge and expertise relating to the processing of logs produced by the timber plantations. Phase III also focuses on development of markets (domestic, regional and global) for wood products as well as resource supply and market demand. Previous phases of SPGS focused mainly on establishment of quality plantations.
- There is no formal record of the extent of the commercial forestry estate in Uganda and therefore an analysis of existing and potential markets has been difficult. FAO therefore conducted a study to: 1) estimate the extent of the timber plantation resource, 2) characterize the timber that the commercial plantations will yield in the next 10 years and 3) assess the markets and demand for forest products from timber plantations.

Methodology

- The assessment involved inventory of a sample of commercial timber plantations supported by SPGS, particularly those in excess of 25ha, to determine their growth and yield. Located in main timber growing areas of the country, sampled plantations were Busoga Forestry/ Green Resources (Mayuge and a pole treatment plant in Jinja), Global Woods AG (Kyankwanzi), New Forests Company (Namwasa), Nileply Group/ Nile Fiberboard Limited's medium-density fibreboard mill (Nakasongola) and state-managed forests under National Forestry Authority (NFA). Other sites were Evergreen Wood Industries board mill in Mpigi and local timber traders' yards in Kampala.

- The sampled plantations were aged six to 16 years and had preferred timber tree species. Due to time and budgetary constraints, plantations in Karamoja and West Nile clusters were not included in the field assessments.
- Woodlots, mostly less than 25ha and predominantly established for subsistence, were not included. However, in the future, as part of a proposed National Forest Inventory initiative, a more inclusive study of all the plantations in the country will be conducted. Assessment also involved discussions with beneficiaries of the SPGS grant, government officials, private forestry companies, traders, buyers and potential customers.
- Assessment of domestic and regional markets was based on extensive literature research and information from Uganda Revenue Authority (URA) and the FAOSTAT platform, on timber trade between Uganda and its neighbors. However, the study did not consider non-timber forest products (NTFPs) such as resin, charcoal, bark and mushrooms; and the informal, dynamic and localized market, especially for harvesting and sawmill residue. The assessment also excluded timber from natural forests, micro-scale and informal plantings of any other species as well as short rotation eucalyptus (three to five years), often used for building and fencing poles.

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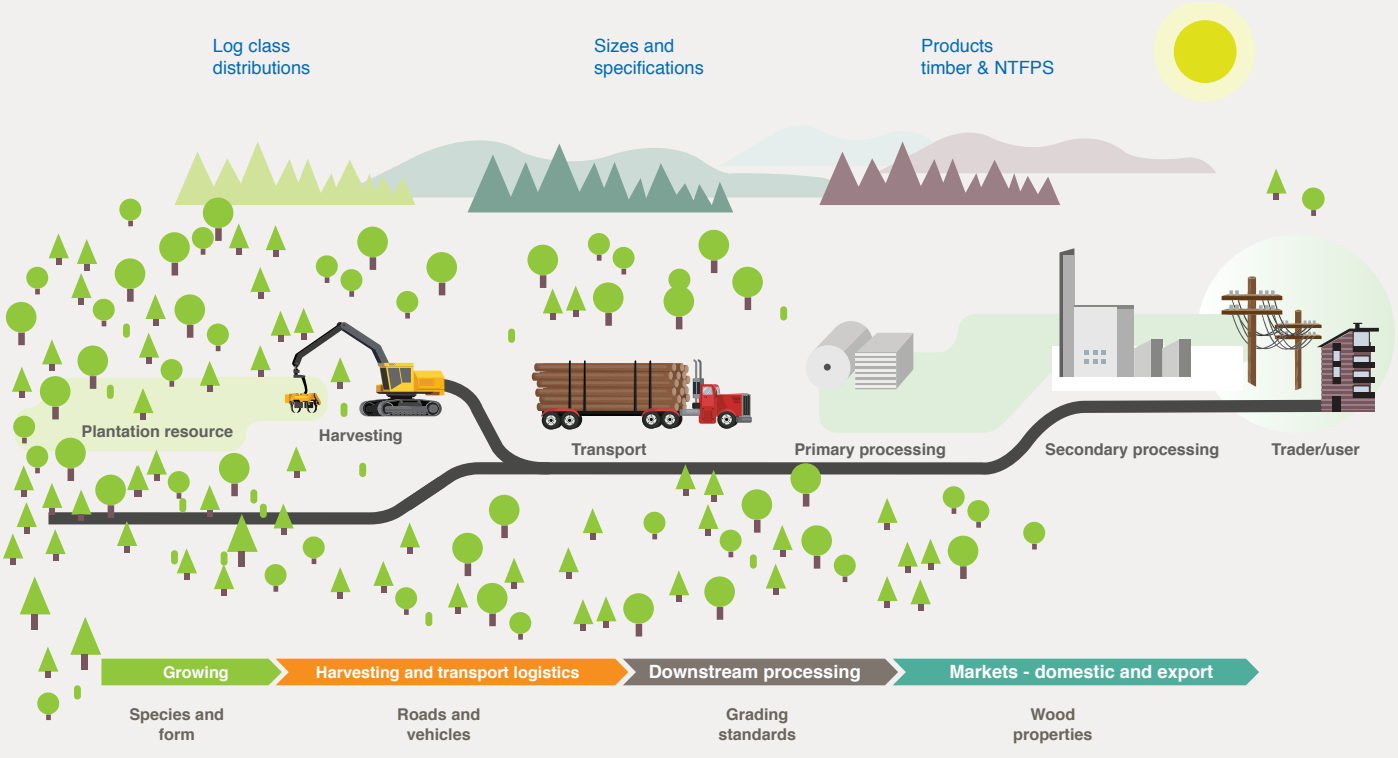
Figure 1 below shows the forestry value chain structure used during the assessment.

Figure 1: Forest value chain



The study assessed the following working circles:

- Long rotation: (15–20 year rotation with thinnings) of *Pinus caribaea, Pinus oocarpa* and *Pinus patula* for sawlog, veneer and pulp
- Eucalyptus long rotation: (eight to 12-year rotation with thinnings) of *E. grandis,* clonal hybrids of *grandis x camaldulensis* and *grandis x urophylla* for veneer, sawlogs and poles
- High-value-hardwoods working cycle of *Tectona grandis,* (Burmese teak) and indigenous species such as *Terminalia superba* and *Maesopsis eminii* for production of sawlogs for appearance grade sawn timber for furniture.

Plantation establishment and supply of wood based resources

In the absence of formal records of the extent of the commercial forestry estate in Uganda, the assessment relied on information from the National Forestry Authority (NFA) and tree growers supported by SPGS Project, as shown below.

Table 1: Commercial plantation area by organization

Period	Green Resources	Global Woods AG	NFA	New Forests Co.	Nileply	SPGS	Total
1990-2003	619	7	680	0	1 450	67	2 823
2005-2013	5 249	4 478	9 085	7 083	3 697	15 757	45 348
2014-2019	844	4 206	679	4 574	853	25 000	36,155
Total	**6 711**	**8 690**	**10 445**	**11 657**	**6 000**	**40 824**	**84 327**

This assessment focused on the timber volumes that will become available in the next 10 years and therefore considered the most mature plantations, established between 2004 and 2013, and expected to start to yielding timber in the next 10 years. Table 2 below shows the preference of tree species and area planted between 2004 and 2013. The assessment also found that large areas of plantations were established between 2008 and 2012 (86 percent), a period when SPGS was actively supporting plantation establishment. Pine was the commonest planted tree species.

Table 2: Commercial plantation area by species

Period	Pine	Eucalyptus	Other	Total
2004-2013	39 056	5 777	515	45 348
Percentage (%)	86	13	1	100

Figure 2 shows area planted by age and organization while Figure 3 below shows area planted by age by species.

Figure 2: Area planted by age and organization

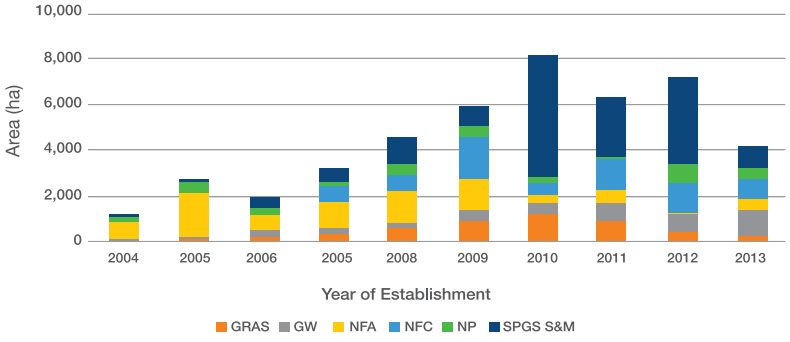
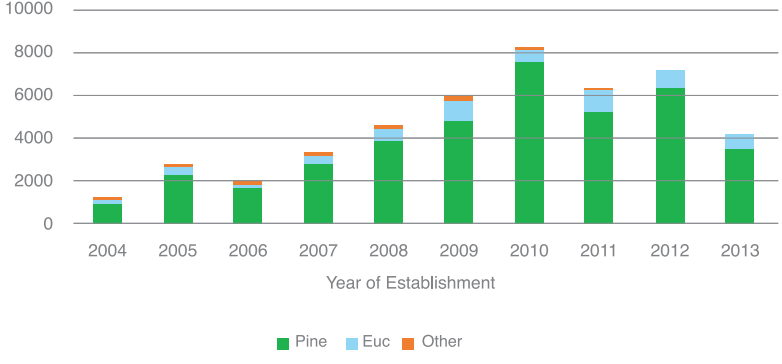


Figure 3: Area planted by age by species



Projected yields

To estimate the potential projected yields or wood flow from the commercial plantations, age class distributions and yields tables for the pine and eucalyptus working circles were used. Projections were then made on the assumption that all stands will yield the volumes indicated in the median stand tables, considering both thinnings and clear fellings from the plantations, according to the standard silvicultural regime. Figures 4 and 5 show projected yields for pines and eucalyptus respectively.

Figure 4: Projected yields for pines

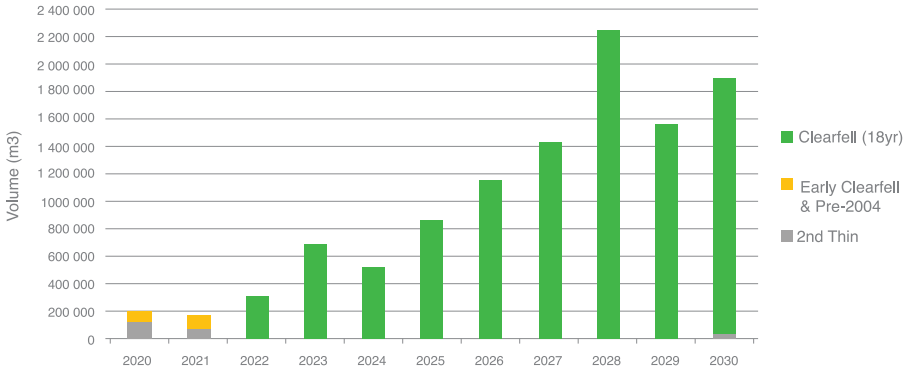


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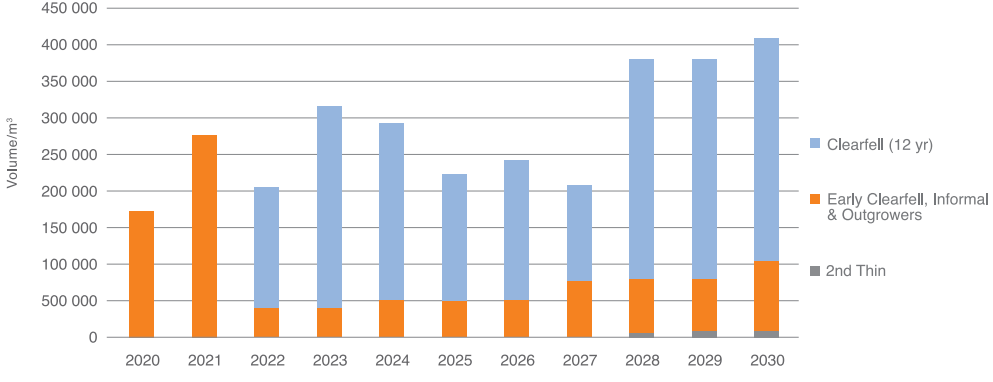
Figure 5: Projected yields for Eucalyptus



As of 2020, wood flow of pine is approximately 200 000 m^3/year and will steadily increase to a peak of about 2.25 million m^3 in 2028; representing an increase in the current flow by tenfold. The interplay of supply and demand will subsequently even out the wood flows, resulting in an average wood flow of about 1.8 million m^3/year, between 2027 and 2030.

Eucalyptus wood flow in 2020 was approximately 171 000 m^3/ year; expected to increase to about 409 000 m^3/year in 2030 and averaging about 280 000 m^3/year. Moreover, many growers are converting their pine compartments to eucalyptus, which has a shorter maturity period/rotation (eight years) compared to pine (15 years). This will ramp up supply of eucalyptus and a lower long-term supply of pine. Furthermore, there is a dynamic and substantial market for eucalyptus building poles at village level, where owners of woodlots (including communities) are selling trees aged three to four years, directly to end users. However, this assessment excluded building poles.

Demand for wood based products – the market

Processing capacity

The capacity of the existing processing facilities (see Table 3) represents the existing and/or near future demand.

Table 3: Capacity of the existing processing plants

Type of processing plant	Round log intake (m^3/year)	Product output (m^3/year)	Residue	% of total processing capacity
Board (particle and Medium Density Fibre board)	168 000	118 000	50 000	35
Plywood (veneer and others)	169 000	92 000	77 000	35
Sawmill - Formal	54 000	22 000	32 000	11
Sawmill -Mobile	89 000	31 000	58 000	19
Total	**480 000**	**263 000**	**217 000**	**100**

Supply of timber products such as pine sawlogs for timber, veneer and pulp as well as eucalyptus poles and wood residues (chips and sawdust), to the formal market, will increase substantially in the next 10 years. However, the current processing capacity and/

or demand in Uganda is in excess of the projected supply of logs. The processing plants analyzed during this assessment can supply about 200 000 m^3/year of pine and 35 000 m^3/year of eucalyptus (20 percent of the estimated eucalyptus supply of 171 000 m^3year), against a processing capacity of 480 000 m^3/year (Table 3). The remaining 80 percent of estimated eucalyptus supply is used for transmission poles. Additionally, Uganda's commercial plantation targets production of large volumes of sawlogs and yet the bulk of the demand, mainly for wood, is suitable for board mills (typically small).

Market prices

Local market prices are relatively stable, with insignificant variances depending on location or type of processing plant. From plantation to sawmill, logs are valued at about 110 000 to 120 000 UGX/m^3 (based on distance from compartment to sawmill). Over the years, SPGS has tracked the price of narrower timber planks, typically used for structural purposes (6 x 2inches x 14ft and 4 x 2inches x 14ft). These prices have remained static at approximately 550 000 UGX/m^3. However, prices in markets farther away from Kampala are substantially lower; in Mbarara for instance, the price of comparable products is about 420 000 UGX /m^3. The price difference can be attributed to transportation costs.

Timber business in Kampala is highly informal and many transactions are exclusive of the 18 percent Value Added Tax (VAT) that buyers would typically pay for sawn timber from bigger growers. Some private companies are able to get premiums as high as about 677 000 UGX/m^3 (VAT inclusive) or 574 000 UGX/m^3 VAT exclusive) for standard sizes and 1 500 000 UGX/m^3 for wide boards (>8inches / 200 mm) obtained by increasing the felling age or laminating narrow boards. Furthermore, domestic prices are below import parity (lower than the expected prices for similar imported products).

Demand

- With a reported deficit of about 16 million m^3/year of round wood which is projected to more than double to 34.4 million m^3/year by 2030, Kenya presents a significant market for Uganda's timber. The Kenyan market also offers more favorable prices than Uganda's domestic market and the former could increase as demand exceeds supply. This situation will make timber exportation lucrative and therefore it is critical to address existing constraints in Uganda's timber export market.
- Ongoing electrification programmes in Uganda, Kenya, Tanzania and Rwanda have contributed to increased demand for large treated poles (nine to 14m and small-end diameters of 15 22 cm), which has caused a rise in prices. Today, more local growers

are supplying large treated electricity poles, as well as short-rotation, untreated small building poles, which have a growing market.

- The current timber processing technology in Uganda is characterized by low recovery rates (25-40 percent), resulting in production of substantial wood residues. The use of residues is limited to the domestic biomass market and some manufacturers of particle board. The prices for wood biomass are not attractive although there are unconfirmed reports that some companies are willing to pay better prices.

Conclusion

The Ugandan forestry sector has well-established resources of mature timber plantations and a relatively low-cost base, which gives it an advantage to compete in the regional timber market. Uganda is expected to witness large volumes of timber in the next few years, ranging from 350 000 m^3/year to a peak of 2.6 million m^3/year in 2028. In the next 10 years, the estimated sustainable volume is about 1.8 million m^3/year. The current and projected domestic demand for forest products indicates that the supply of timber will exceed the capacity of the Ugandan market. Given that demand for forest products in the East African region is high and will only keep increasing, Uganda should leverage this comparative advantage and encourage timber exports while at the same time maintaining commercial incentive to grow trees.

Recommendations

To benefit from a thriving commercial forestry sector in Uganda, the following actions are recommended:

a) Adoption of modern processing technologies in order to maximize recovery, effectiveness, efficiency and minimize waste.

b) Procurement of equipment, which mechanizes most of the manual operations, enhances workers' health and safety, increases production and productivity (Mwamakimbullah, 2019).

c) Addressing administrative bottlenecks to acquiring export permits for sawn timber.

d) Retraining forestry operators and empowering them with skills and knowledge in timber processing.

Reference

Mwamakimbullah, R. 2019. *Modular downstream integrated sawmill model for Uganda*. Unpublished report, Kampala, FAO.

This summary was produced for the report on Assessment of the Uganda Commercial Timber Forest Plantations and Market for its Products, produced under the Sawlog Production Grant Scheme (SPGS) Phase III. FAO implements SPGS III on behalf of the Government of Uganda, with financial support from the European Union.

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