

Getting a good return on money

Investing in cypress and pine plantations makes business sense

By Joshua K. Cheboiwo

The *Pinus patula* tree, commonly known as Mexican weeping pine, is native to Mexico. It grows between latitude 24° to 18° north and 1800 to 2700 metres above sea level (masl) and can reach heights of 30 metres. It thrives in areas with 1100 to 2000mm average annual rainfall. *Pinus patula* has been grown as a plantation species in many countries outside Central America. In Africa, it grows well in the highlands of Kenya, Tanzania, Angola and Zimbabwe.

Pines are among fast growing softwood species that include *P. radiata*, *P. patula*, *P. caribaea*, *P. elliottii* and *P. oocarpa*. Though most of these species are grown in Kenya, the widest grown species is *P. patula*.

Cupressus lusitanica (cypress), also known as Mexican white cedar, is native to Mexico and Central America and grows at an altitude of between 1200 to 3000 masl. It grows up to 40 metres tall. Fast growing, it has been introduced from Mexico to different parts of the world. It has been planted widely for commercial production at high altitudes in South Africa, East Africa and New Zealand.

Kenyan experience

Cupressus lusitanica and *Pinus patula* are some of the key exotic species introduced for planting in public forest plantations in the 1920s that have become popular timber species in Kenya. They are popular because of their relatively fast growth and short rotation compared to most indigenous species in high and medium potential areas of Kenya. The two exotic species produce high quality timber with high market demand.

Cupressus lusitanica and *Pinus patula* were planted on farms due to availability of free

or highly subsidised seedlings from the Forest Department nurseries in the 1970s. As such, early planting on farms radiated around government run nurseries. Many farms in high-potential areas have hundreds of the two species, mostly growing in homesteads and boundary lines. For a long time, public forests dominated the growing of cypress and pines for sawn wood markets, a situation that changed drastically with the ban on harvesting of saw logs from public plantations.

Growth performance and financial returns

Recent surveys show that cypress and pines still constitute a good proportion of planted trees on farms, accounting for up to 30 per cent of the planted trees species in Kenya's Rift Valley. The supply shortfall after the ban on harvesting in public forests and closing of sawmills resulted in an increase of sawn wood retail from Ksh 7,000 to Ksh 25,000 per metric tonne by mid 2003. Similarly, cypress saw log prices at farm level rose from Ksh 800 to Ksh 3,000 per m³ for premium logs, mostly over 25 years.

These changes transformed farmers from subsistence saw log and sawn wood producers into key commercial producers. The lucrative

saw log and sawn wood markets brought a huge financial windfall to farmers who planted trees in the 1960s and 1970s. The developments have motivated farmers and private companies to expand planting of saw log plantation as a commercial venture to fill the gap left by declining public forest sector.

Cypress plantations can accumulate wood at an average growth rate of approximately 26m³/ha/yr and *P. patula* records higher growth of up to 30m³/ha/yr under good climatic and management conditions. Two commercial thinnings are done at 12 and 17 years, yielding a total volume of 300m³. The final yields between ages 25 and 30 years range from 420 to 560m³ or 0.78 to 1.5 m³ per tree. At the current stump price of Ksh 2,500/m³, income ranges from Ksh 2.2 to 5.5 million/ha, or net present value (NPV) discounted at 10 per cent, Ksh 240,000 to 400,000 per hectare.

The returns are better than low input maize enterprises of Ksh 88,000 and 96,000 but lower than tea and high input maize crops. However, the rate of return for saw log plantations is 1:4 compared to 1:14 for maize enterprises, showing that trees give higher returns to every shilling invested.



The remnants of an old KEFRI trial on introduction of pine species in Kenya. This specimen, most likely a *Pinus tecunumanii*, shows the potential of certain Rift Valley sites (Masaita, close to Londiani). (Photo BGF)



A plantation (about 10 years old) of Caribbean pine (*Pinus caribaea* var *hondurensis*) in Uganda. Maintenance is done well, although pruning could have been higher and more thinning is required. However, this plantation is well underway to sawlog production. (Photo BGF)

Market opportunities

Kenya's importance as a player in industrial forestry production and processing in the region has declined since the ban on logging was enacted in March 2000. It is estimated that about 400 sawmills, worth approximately US\$ 60 million, had been forced to close by August 2006 because of shortage of sawlogs since the ban took effect.

Lifting of the ban will not solve the current shortage immediately because of the decreasing stock of wood in public forests. The growing stock on public forests in 1990 was estimated at 52.05 million m³, which was reduced to 16.3 million m³ by 2008. Public plantations projections indicate that they will fall from 115,000 hectares in 2009 to stabilise at around 80,000 hectares by 2050. The annual allowable cut will fall from 540,000 m³ and stabilise at 326,000 m³ by 2050. Thus, timber production in public plantations will not be sufficient to meet the country's needs and private sector and farm forestry will have greater opportunities to fill the gap.

Currently, the private sector (mostly farms) supplies the market with about 95,000 m³ of sawn wood worth Ksh 2 billion whereas the demand

for industrial logs in the country stands at about 1.5 million tonnes per year.

Serious shortages are being experienced in the pulp and paper, saw milling, plywood and particleboard industries. In fact, the country is importing wood from Tanzania, South Africa, Malawi and Sudan. Timber imports from Tanzania began in 2003 due to the ban and high prices and since then, imports have risen ten-fold. Kenya has been importing timber worth US\$ 13 million each year, mostly from Tanzania, Malawi, the DRC and Uganda, to meet the deficit in supply in the local market.

Recommendations

The findings indicate that despite competition from agricultural land use, cypress and pine plantations are viable enterprises with good cost-benefits ratios, indicating higher returns to invested funds as compared to high-input



A mature, gazetted, plantation of cypress (*Cupressus lusitanica*) with some patula pine trees (*Pinus patula*) in between. Some trees have lost value as timber because of stem injuries. Felling is required but no exploitation is taking place because of the logging ban ... (Photo KFS)

agricultural crops. The increasing saw log prices make business sense to invest in round wood cypress and pine plantations on private land, farms and public forest concessions. The changing demand/supply situation for industrial round wood is increasingly making the business more profitable. The KEFRI findings provide strong support for farmers and the private sector to enter industrial forest plantations.

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