



**TOP: Bamboo furniture workshop at the Forest Products Research Centre (KEFRI), Karura.**

**RIGHT: A small sawmill with a circular saw, at KEFRI's Wood Processing Centre.**



# A forest of activities

## An overview of the wood industry in Kenya

By Joseph Githiomi

Kenya has 3.467 million hectares of forest cover, which is equivalent to 5.9 per cent of its land area. Out of this, 1.417 million hectares or 2.4 per cent of the total area comprises indigenous closed canopy forest, mangroves and plantations in both public and private lands (KFS Strategic Plan 2009). These forests provide the raw material for forest products industries all over the country.

Forest industries can be classified as wood-based and non-wood-based. Wood based industries are further divided into mechanical wood industry and pulp and paper industry. The mechanical wood industry includes sawmilling, wood-based panel manufacture (plywood, particleboards and fibreboards), wood processing and pole production.

### Sawmilling

According to a survey carried out by Kenya Forestry Master Plan in 1994, there were some 450 sawmills and saw benches in Kenya, with an annual consumption of about 540,000 m<sup>3</sup> of saw logs and producing about 200,000 m<sup>3</sup> of sawn timber annually (KFMP 1994). The sawmill capacities varied from less than 500 m<sup>3</sup> of log input to over 30,000 m<sup>3</sup> per annum in big mills. The mills could therefore be categorised into three, namely: small scale, medium scale and large scale, with over 80 per cent of sawmills being small scale.

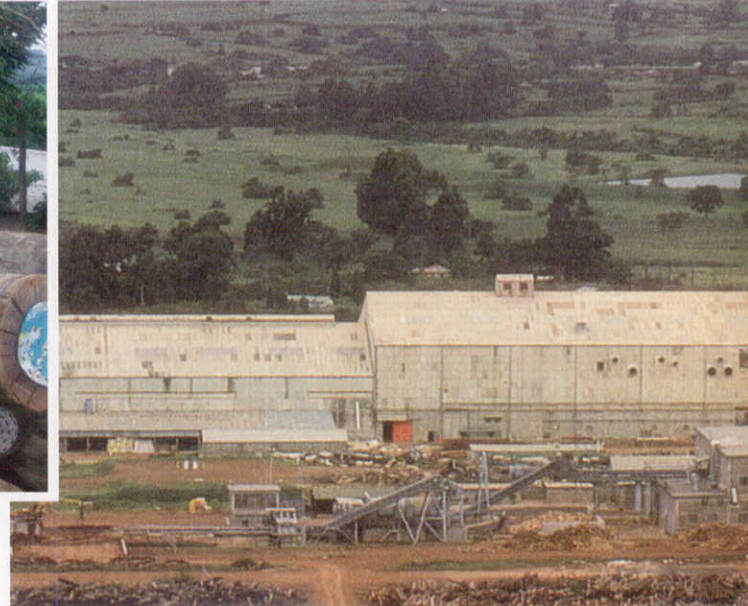
The majority of small scale sawmills had old, inefficient machinery where tractor engines, electric motors and saws were used, with a low average recovery rate of 20 – 35 per cent. Other causes of low recovery included the use of unskilled labour, thick saw blades, poor saw blade maintenance (saw

doctoring) and poor cutting practices. Drying of timber, either by air or by kiln, did not take place, and almost all produce was sold in a wet state.

However, with the 1999 ban on timber harvesting, most small scale sawmills closed down. The few that are still operating get their supply from farmlands. Some tea estates operate sawmills using their own plantation materials while others use logs from farmlands. The ban on timber harvesting has made on-farm timber processing (using inefficient chain saws) very popular and therefore depleting the countryside of trees of more than 30cm diameter. It is hoped that the government will lift the ban on timber harvesting soon, and give timber licences to efficient sawmills, preferably with band saws, for a higher timber recovery.



**KPLC transmission poles.**



### **Plywood**

Plywood production in Kenya started in the early 1980s. There are three plywood mills that are also integrated with sawmills in the country. These are Timsales, Comply and Rai Plywood. Elgeiyo Sawmills Limited, which used to make plywood, closed due to non-availability of materials. The industries produce good quality interior grade plywood with thickness ranging from 3 to 25 mm. Pine accounts for 80 per cent of the input, followed by cypress, which is harder to process.

Annual labour productivity is estimated at 20m<sup>3</sup>/person, which is low. This can be improved by investing in machinery that can process smaller sized logs. The ban on indigenous hardwoods, through necessary, hinders the production of high valued plywood for furniture and interiors. Lack of pruning and thinning has also led to the production of lower quality raw material.

### **Reconstituted wood-based panel industry**

Reconstituted wood products comprise fibreboards and particleboards. Timsales Fibreboard Industry (formerly Sokoro Fibreboard) was established in early 1970 with an annual capacity of 7,000 tonnes. The technology employed in this factory is obsolete and needs to change for the factory to survive.

There were two particleboard industries in Kenya - Rai Plywood Limited and Menengai Chipboard - but the latter has closed due to lack of raw materials. Though both were established in the 1980s, their output has remained low.

### **Furniture and joinery industry**

The furniture and joinery fixture products use approximately 77,672 m<sup>3</sup> of timber per annum. This industry consists of hundreds of small-scale entrepreneurs both in the

rural and urban areas, mainly in the informal sector. Indeed, jua kali artisans control over 60 per cent of the furniture market.

Indigenous wood has traditionally been the raw material for furniture and joinery products. However, the ban on natural forest harvesting has forced a shift towards exotic hardwood, mostly obtained from the Congo.

This sector also includes two pre-fabricated housing manufacturers - Economic Housing Group (EHG) and Timsales. (See article on EHG on pg 8)

### **Pulp and paper industry**

Paper consumption in Kenya is about 150,000 tonnes per year. Packaging paper and board represent about two-thirds of the market. Local production has not been able to supply the demand and about one-third is imported. The 87,000-tonne capacity Pan African Paper Mills in Webuye, now under receivership, was the only company licensed to manufacture paper from wood. The company had been protected by high import duties and a bureaucratic import licensing system, but still went under in 2009. The government has now revived it as Webuye Paper Mills.

The other paper manufacturing industries like Kenya Paper Mills, Madhupaper and others, obtain their raw materials from waste paper. Kenya's paper and paperboard industry, though small by international standards, is one of the biggest in Africa.

### **Tannin and resin industries**

There were two wattle tannin-extracting factories in Kenya - Kenya Tannin Extractors Company Limited (KTE) in Thika and East Africa Tannin Extraction Company Limited

(EATEC) in Eldoret. Both have closed but a new tannin factory has been set up in Athi River.

There are two classes of resins, oleoresin and oleo-gum-resin. Oleoresin has greater industrial potential and it is tapped from *Pinus patula*, *P. caribaea*, *P. elliottii* and *P. radiata*. Rosin Kenya Limited in Nakuru, with an annual intake of 360 tonnes, is the only company tapping oleoresin in Kenya.

Oleo-gum resin is tapped from acacia trees in North Eastern Province and marketed as a raw material without processing.

### **Transmission poles**

The bulk of wooden poles for power grids and telephone lines are from *Eucalyptus saligna* or *Eggenolis* of 10 to 23 years rotation, depending on the required size. Kenya Forest Service had been the main source of supply but companies like Timsales, Kakuzi and Unilever Tea, among others, are now supplying them.

Timsales, one of the major suppliers of treated transmission poles, sources them from private farms. The poles are pressure treated with CCA to increase their lifespan. The rollout of the rural electrification programme has increased the demand for transmission poles. It is however possible that KPLC will start giving preference to reinforced concrete poles. Though more expensive, these are more durable and stable and give less problems with the "fittings" (the points where the crosses with the cables are attached to the pole.)

### **Woodcarving**

It is estimated that Kenya woodcarvers require some 600 tonnes of wood per year. The preferred species for wood carving are *Dalbergia melanoxylon* (mpingo) which



**Pan African Paper Mills in Webuye.**



**Trussed rafters made from graded cypress timber put into place on residential property in Nairobi. The rafters are designed to carry concrete tiles.**

have been exhausted and *Brachylaena hutchinsii* (muhugu) which is also in short supply. The famous neem tree or mwarubaini (*Azadirachta indica*) and mango are emerging as prime candidates for woodcarving. (See article on woodcarvers on pg 18)

### Charcoal briquettes production

Charcoal briquettes are mainly produced from coffee husks, excess sugar bagasse and charcoal wastes. The main export markets for charcoal briquettes in the past have been Saudi Arabia, Israel and Korea. One of the leading processors of charcoal briquettes for the local market is Chardust Limited.

### Truss rafters production

Trussed Rafters Development Unit (TRDU), under the Ministry of Housing, makes prefabricated roof trusses. Located in Ngong, the unit was formerly under the Ministry of Public Works. The unit is equipped with a simple industrialised set-up of truss fabrication jigs (which give support to truss members), fabricated hand-nailed metal plates and conventional woodworking machines. The prefabricated roof trusses are light in weight and are made from graded timber.

A private company, Harry-Timber Engineering Services Limited (H-TES) located along Mombasa Road also makes prefabricated trusses. Truss rafters are gaining popularity in the construction industry due to savings in timber.

### Opportunities in the development of the forest industry

- Kenya is an ideal location for wood industries due to availability of abundant

and affordable labour and is a member of regional trading bodies such as COMESA, which provide a large market for forest products.

- The ministry of industrialisation promotes industrial growth and reduction of manufacturing costs through granting exemption of import duty on all industrial spare parts. The ministry also grants a remission of duty on inputs for use by paper and paperboard mills.
- The proposed forest policy recognises the benefits of a viable and efficient forest-based industry for national development.
- With the ban on timber harvesting from gazetted forests, there has been increased on-farm tree planting, thus increasing the forest resource base. There is also potential for production of pulp and paper from other raw material of agricultural wastes e.g. bagasse.
- With the planting of fast-growing bamboo on-farm, there is potential for the development of bamboo furniture making, which is being promoted by the KEFRI- Forest Product Research Centre. Bamboo can also be used in pulp and papermaking.

### Challenges to forest industry development

- The government ban on timber harvesting has resulted in insufficient wood for forest industries, leading to the closure of a number of industries.
- The existence of outdated and inefficient forest industry technologies mainly contributed to the initial government strategy on import-substitution

industrialisation (ISI).

- There is a shortage of trained personnel, especially in the sawmill industry, where most are operated as family businesses.
- Due to scarcity of timber, wood products have become very expensive and are being edged out of the market by plastic furniture, T and G ceilings, doorframes and cornices, etc.
- Timber products from farms are of low quality as there has been no proper silvicultural management of the trees.

### The way forward for forest-based industries

- The government should develop policies to facilitate the promotion of efficient conversion technologies, product quality improvement and development of forest product markets.
- The ban on logging should be lifted so that over-mature logs rotting away in government plantations are used profitably.
- Arrangements should be made for forest products modernisation, which should include effective pollution control.
- The government should facilitate modernising forest industries through reducing import duties on machinery.
- The market intelligence system should be developed to provide forest products market information.
- Standards of forest products should be improved to attract local and export markets.

*The writer is Principal Research Officer, Kenya Forestry Research Institute.  
Email: githiomikefri@ngara.org*