



## 4.9 Chainsaw milling in Nigeria

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### Context

Forests in Nigeria are being depleted at an alarming rate. A mere 5% is left after uncontrolled logging and conversion for special projects, such as offices and residential buildings and sporting complexes. With the Structural Adjustment Programme (SAP), a World Bank prescription to address economic recession in developing countries in the 1980s, the cost of major forest operation equipment increased by between 200% and 2000%. This left more than 90% of the industry operators with unserviceable or depreciating production plants and equipment. Since then, the number of new entrants into the formal milling subsector has been negligible (less than 10%) as few publicly owned concerns were either privatized or sold outright. These macro-economic problems drastically affected technical and financial efficiency and cost recovery of existing operations. Capacity utilization dropped to barely 30%. This scenario encouraged chainsaw milling (CSM). CSM is seen by many practitioners as affordable and its products, though not high quality, are affordable to the end users, who are largely resource-poor.



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### Chainsaw milling in Nigeria

CSM is usually unauthorized and illegal in Nigeria. Operators illegally gain access into the forest, fell the trees, hurriedly convert them to planks of different dimensions, and hand-carry them to the nearest road, where they are transported to markets. Chainsaw millers seek legal authorization, usually by arguing that their operations can extract logs from difficult terrain where access by truck is impracticable. CSM operators frequently misuse this authorization by extending their activities to other areas of the forest.

Opinions are divided on the profitability of chainsaw operations. One study showed that the profit margin for the use of chainsaws for sawnwood production was 36% of the price per m<sup>3</sup> on the market and 57% of the average cost of production/m<sup>3</sup> (Udo 1994). The Food and Agriculture Organization earlier reported a similar margin (FAO 1979) and the Federal Department of Forestry of Nigeria reported a profit margin between 15 and 25% per m<sup>3</sup> of wood converted.

The profitability of CSM operations increase with the rate of wood recovery. The mean recovery ratio for six selected species of timber in Cross River State is about 46%; the Forestry Research Institute of Nigeria (FRIN 1984) reported a rate of 47% for conventional sawmills. Factors such as log size, operator skill and log size also affect wood recovery in CSM. Log size had the greatest impact on the recovery rate; large logs allow for an efficient alignment of the saw and a higher-quality of sawnwood.

Adebagbo (1992) reported that CSM products derived from 23 species of trees were found at Bodija market in Ibadan. Of the 13 species studied by Popoola (2006) for comparison of volume recovery between conventional sawmill and chainsaw operations, seven were found to provide a higher recovery rate with chainsaws than conventional sawmills. Chainsawn planks were found to command lower prices in the market than those produced from conventional sawmills, however (Ogunsanwo, Aiyeloja and Filani 2005).

Ogunsanwo, Aiyeloja and Filani (2005) also argue that the extensive waste often associated with CSM could be reduced if the operation was legalized, better-trained operators were employed and the work was more carefully executed and monitored. The method could be less harmful to the environment as it ensures that off-cuts and other wood wastes are recycled in situ. Damages to residual stocks and untargeted species and damage by heavy equipment would also be reduced. Governments might see an increase in revenue due to issuance of permits. Farmers' incomes would also increase because they could sell stands of trees directly to chainsaw millers.

A thorough investigation of CSM is needed to be able to optimize its strengths and minimize its weaknesses. This paper reports on the Nigerian component of a study sponsored by the UK's Department For International Development (DFID) on CSM in three countries (Cameroon, Ghana and Nigeria).

### Methodology

Benue, Cross-River, and Osun States are located in three different agro-ecological zones (Figure 1). The states were selected for this study on the basis of prevailing CSM activities there:

- In Benue State, in the guinea savanna zone, CSM is rampant and dominates the timber trade.
- Cross River State (CRS) has a relatively high percentage of high forest, yet CSM is prevalent and conventional sawmilling is rarely practised.
- Osun State is a rainforest state with a high incidence of conventional sawmilling and a permissible level of CSM.

Three sets of questionnaires were used within selected study sites to obtain information from stakeholders, including forest officials, lumber marketers, chainsaw operators and households. Information included operational efficiency, availability of wood for sawing, environmental impacts of the practice, and contribution to sustainable livelihoods of operators. Data were analyzed using descriptive statistical analysis.



### Foremen

Most (75%) CSM entrepreneurs work with foremen, tree markers, chainsaw operators and other categories of hired labour. A foreman's income ranges between US\$10 and US\$20 per day. Some of them also have other jobs, most important of which are driving and farming, artisanship, sales and porter. These alternative jobs bring in an additional income ranging from US\$6–9.

### Chainsaw operators

An operator's income ranges between US\$18 and US\$40 per day. This compares favourably with what the average skilled worker such as vehicle driver or electrician could earn. This provides an incentive for young able-bodied people to take up chainsaw operation. Operators usually work with assistants, referred to in Nigeria as a partner. Assistants earn from US\$6–12 per day.

### Lumber porters

Lumber porters carry the sawnwood from the stump site to the landing site for loading onto trucks. The porters are usually engaged only when there is work to be done. Their average daily income ranges from US\$2.50–12.50.

### Loading gang

Also referred to as loaders, they move planks from the gantry or landing site to the truck. They are unskilled labourers; women and young adults sometimes do this work temporarily to earn income for immediate needs. The daily income for a loader ranges from US\$2.50–12.50; most earn about US\$4. Earnings depend on the number of planks carried. They also have alternative jobs such as commercial motorcycle riding (*okada*), farming and working as security guards, labourers, porters and shop assistants.

### *Changes in production methods*

In the late 1970s and early 1980s, CSM was completely outlawed in several states of Nigeria. Since SAP years, however, which led to the removal of subsidies on petroleum products and equipment, and to massive currency devaluation, many sawmills and logging companies ceased operations or operated with obsolete and inefficient plants. This led to the rise of chainsaw operations in many localities. The gradual growth and acceptance of CSM products in the timber market have encouraged a refinement of the processes and the products. Chainsaw operators now line and measure logs preparatory to flitching. In some places CSM products are so high quality that it takes a discerning eye to spot the difference between it and mill-sawn wood.

### Resource ownership

One of the major problems of valuation in forestry is that ownership of the resource is not well defined. This underlies the erroneous notion that forestry is not a major contributor to national income. Chainsaw milling suffers from this perception. If CSM is not considered a major contributor to national income, then it is necessary to consider how important it is to resource owners and to what extent they are prepared to invest in managing them sustainably.

According to the FAO (2004) three key factors influence the ability of resource owners to fully appropriate values and transform them to economic benefits:

- resource characteristics;
- ownership of resources, including policies and legislation that define ownership, the social and economic conditions of the owners and more importantly their entrepreneurial ability (including the ability to understand changing opportunities and to move up the value chain); and
- the nature of markets served.

These factors interact with each other, altering the ability to capture the different values derived from chainsaw milling.

Unfortunately, stakeholders in the forestry sector display less and less interest in understanding the intricacies of its management. This is compounded by the common-property characteristic of most natural forests where CSM usually takes place. In such circumstance, pricing is inappropriate, and efficiency and transparency in resource extraction are not guaranteed. CSM is largely a private enterprise made up of individual owners with varied interests. In this situation, standards are not assured; nor do ethics and professionalism come into play. Maximum profit is the common aim. In recent times, however, some of the operators have organized themselves into cooperatives or associations, with the common goal of resisting the formal sector's effort to get government to outlaw CSM.

### Markets

The market is a key determinant in any enterprise. Before the 1980s, lumber from chainsaw operations was found mainly in rural and peri-urban markets. The market consisted mainly of people who required wood for rough construction work. With the economic downturn of the mid-1980s, however, CSM lumber began to appear in urban markets, partly because it was cheaper than mill-sawn wood. A drop in personal incomes encouraged buyers to settle for cheaper sawnwood from CSM, thus creating a huge market for it. A survey by Popoola (2006) of selected markets showed significant disparities in prices of chainsawn and mill-sawn planks in Nigeria, ranging from US\$0.16–3.6 per m<sup>3</sup>. By 2009 the difference ranged from US\$0.8–9.0 per m<sup>3</sup>. This becomes significant when large consignments are involved. The lower cost of chainsawn wood can defray the costs of labour and other materials. This is a major driving force in the continuing importance of CSM in the economy. Another driver is the improvement in the quality of the output.



### Policy response

Until recently CSM was outlawed in many states in Nigeria. It continues to be practised, however, and more states are relaxing their legislation, for several reasons:

- depleted timber resources, making investment in formal sawmills unattractive;
- a huge capital requirement for the establishment of sawmills (band saw, trucks,

skilled and unskilled labour, etc.) — these have increased by 1,000 and 5,000% since 1985;

- ageing, inefficient and obsolete plants;
- an unreliable power supply from the national grid and the ever-increasing prices of diesel and petrol;
- increasing fees and charges in the formal sector without commensurate returns; and
- corruption among forestry officials.

These factors have led to poor returns on investments in the formal sector. Many operators in the formal sector have sold off their plants to invest in chainsaws. In light of this reality some states now licence more chainsaw operators. This has created conflict between the formal sector and chainsaw operators. The formal sector wants CSM to be completely banned as a result of its own dwindling fortune. The reality on the ground, however, favours the continued existence of CSM in several localities.

## The future of chainsaw lumber production

### *Threats*

Illegal CSM is still rampant in some localities, although the level of waste tends to be high. Existing laws must be strengthened and sanctions applied to corrupt officials and colluders.

### *Opportunities*

Since most of the trees felled for CSM are obtained outside forest reserves, strategies are needed to increase the number of trees outside forests. Chainsaw operators are now organizing themselves into associations, which establish private plantations in some places. This should be encouraged. Most chainsaw entrepreneurs in Nigeria borrow their working capital and are able to repay their loans with ease. This suggests that the chainsaw enterprise is profitable and dependable. Increasing the capital base would increase the possibility for returns on investments and consequently contribute to poverty reduction.

### *Conclusions*

Chainsaw milling is a major source of sawnwood in Nigeria. It also provides employment for both families and hired labour, thereby improving household and social well-being. Furthermore, the wages earned compare favourably with those of the average skilled worker, and are far higher than the less than US\$1 on which more than 60% of Nigerians subsist. These are clear indications of the social and economic importance of the chainsaw business in Nigeria. There is a need to address policy and governance issues that will make CSM in Nigeria officially recognized and sustainable in terms of social acceptance, economic viability and environmental impact.

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