

ITTO-PROJECT 179/91 - Industrial Utilisation and Improved Marketing of some Ghanaian Lesser-Used Timber Species from Sustainably Managed Forests

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Overview

About four years ago the Forestry Research Institute of Ghana (FORIG) was awarded a research grant of US\$985,273 by the International Tropical Timber Organisation (ITTO) to look at the possibilities of introducing some Lesser-Used Timber Species of Ghana to take care of the dwindling primary species.

The project, originally titled "*Industrial Utilisation and Improved Marketing of some Lesser-Used Ghanaian Timber Species from Sustainably Managed Forests*", is now popularly known as the LUS project.

The general aim of the LUS project was to encourage the forest products industry of Ghana and the sub-region to better utilise their forest resources in order to help aid the development of the Ghanaian society while also attaining ITTO's target 2000, i.e. to achieve complete sustainable forest management by the year 2000. Specifically, the overall objectives were to remove pressure from the over exploited primary species like the Mahoganies, Iroko etc. by increasing the use of available and sustainably managed wood whose characteristics are generally known but not utilised extensively, and using this wood more effectively by minimising waste and increasing value.

The complex nature of the project made it necessary to break down the activities of the project work into three main components.

1. Forest Ecology - To study the ecological impact on the forest after extracting the various species.
2. Wood Technology - which included the Physical and Mechanical properties of the wood, the wood processing characteristics, as well as the manufacturing and product developing expertise.
3. Forest Products Marketing - To study how best the species and their products can enter the local and International markets.

Originally, 14 Lesser-Used Species of Ghana were selected for the study, their selection was based mainly on their availability in the forest and aesthetic value. As results became available during the project, it was deemed necessary to focus attention on a few species rather than continue to work on the original 14 as stipulated in the project document. Eventually, six species were chosen for intensive study: *Ceiba* (*Ceiba pentandra*), *Kyenkyen* (*Antiaris toxicaria*), *Celtis* (*Celtis mildbraedii*), *Essia* (*Petersianthus macrocarpus*), *Denya* (*Cyclocodiscus gabonensis*) and *Ohaa* (*Sterculia oblonga*). Once the fundamental information was collected and analysed, a plan was conceived and implemented to develop prototype manufactured products such as furniture pieces, deck boards, sun beds, etc. A set of outdoor furniture which has been called the "Ghana Collection", was manufactured from the LUS and given extensive exposure at several trade shows and training workshops for small and medium sized firms.

Of particular interest is to note that the President of the Republic of Ghana has a set of the Ghana Collection in his garden.

In addition, a state-of-the-art furniture testing device was acquired in the latter stages of the project and is being used to evaluate the performance of the furniture.

In a section of the city of Kumasi known as Sokoban, an industrial park is being developed for small to medium sized wood product manufacturing firms. The development is known as the Wood Village. The results of the LUS project has been presented in a special training workshop to some entrepreneurs who will be located in the wood village. Thus, the accomplishments of this project will be put to good use in the near future.

Summary of the Important Findings

Forest Ecology

The environmental component of the project focussed on damage to residual trees and the effects of logging on tree regeneration. The first part of this study examined the type and extent of physical damage caused to residual stands through tree felling, log extraction and road construction. The second part measured the effects of logging on pre-existing seedlings, assessed post-logging tree seedling recruitment and composition as well as the effect on tree biodiversity.

The study was conducted in one compartment each from three selected forest reserves, namely; Opro River in the Dry Semi-deciduous forest zone, Bura River in the Moist Evergreen forest zone and Draw River in the Wet Evergreen forest type (see Figure 1). These reserves cover the full environmental variation in timber producing forests in Ghana. All aspects of the studies in Bura and Draw Forest Reserves were completed within the project period. Delayed log extraction in Opro Forest Reserve made it impossible to carry out regeneration studies, within a period of 12 months after extraction.

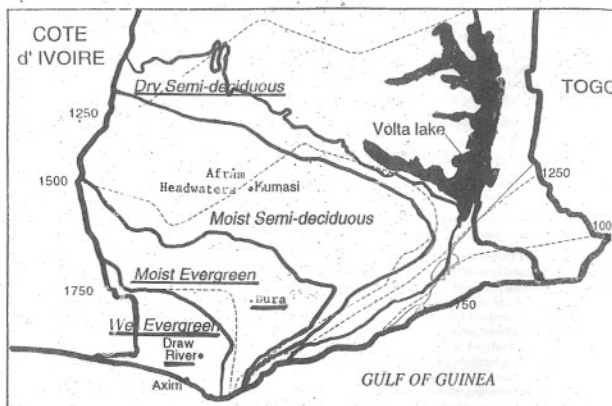


Figure 1. Forest ecological map of Ghana showing the study sites for the Ecological studies.

The felling damage assessment has indicated that the falling tree creates more opening per felled tree per hectare followed by skid trails and roads. For instance, the mean area of felling gap per hectare was 790m^2 in Draw where felled trees were bigger and 680m^2 at Bura where trees were smaller in diameter. Total disturbed area was 13.4% and 12.7% at Draw and Bura respectively. This level of disturbance is considered low but this could rise if felling intensity is to be increased.

The regeneration studies indicated that disturbance due to logging markedly reduced pre-existing tree seedlings in felling gaps and skid trails but the stimulation of new seedling establishment significantly exceeds the losses.

Regeneration of all tree species is enhanced by the disturbance, although pioneer or light demanding species are more favoured. The regeneration also contains important timber species. However, patchiness in seedling densities is noticed in all species. This patchiness is attributed to patchiness in seed source and emphasises the need for seed retention in forest management. Tree biodiversity was noted to have increased in disturbed areas than undisturbed forest.

It is evident that the composition of the new regeneration after logging may not necessarily be the same as the present composition. The drift in forest composition whether logged or not logged is already evident in Ghana's forests. This should not pose any problem if a wider range of timber species can be marketed.

It is noted that the intensity of logging in these trials is low by international standards, affecting only 13% of the concession area. If a larger area is disturbed, we cannot safely assume that the benefits observed will be retained. There is the need to determine the optimum felling intensity in all the forest types in order to derive the optimum benefit from logging.

Wood Processing and Product Manufacture

Fundamental information on the 14 species initially selected for this study was acquired in the early stages of the study.

Information on physical and mechanical properties of the species was collected from the literature. Sawing characteristics, machining characteristics, drying characteristic, gluing, mortising etc. were also obtained through technical studies carried out by the project team at some sawmills. FABI Timbers in Kumasi, Swiss Lumber in Manso Amenfi, Bondplex in Kumasi, LLL in Kumasi and Ghana Primewood (GAP) in Takoradi need special mention. These firms allowed us access to their mills for the studies. Special thanks to these Companies.

Based on the information collected in the early stages of the project, as well as forest inventory data, indicating stocking levels of the LUS, and as the project progressed, the results of further technical studies along with the identification of pertinent marketing intelligence dictated a limitation of the species to six: *Ceiba*, *Celtis*, *Kyenkyen*, *Essia*, *Okan* and *Ohaa*, as mentioned above.

A brochure containing technical data has been developed for the promotion of the six species and a condensed version is being placed on the Internet.

Following up on the garden furniture marketing strategy, a group of several prototype chairs, tables and recliners has been manufactured under the project.

This set of furniture is termed "The Ghana Collection". The collection has been displayed at various trade shows, e.g.

- Indutech in Accra
- Gifex in Accra
- Gifex in Cotonou, Benin
- At the Mini-Exhibitions at FORIG
- At the Wood Industry Training Centre (WITC) and during the 20th Biennial meeting of the Ghana Science Association (1997), Kumasi.

In addition to the exhibitions three training workshops have been conducted in Kumasi, Takoradi and Accra in order to transfer the knowledge obtained during the course of the study.

Finally, a state of the art furniture-testing device has been acquired and is in the initial stages of testing the garden furniture.

Forest Products Marketing

Several aspects were considered in the marketing area. Both domestic and export markets received attention. Industrial raw material markets as well as consumer products were explored. The size and capabilities of the firms hoping to use LUS was taken into account with respect to the marketing studies. It

was found that the same channels of distribution for the traditional well-known species can be used for LUS and the Internet may be a new way to establish more contacts within the distribution channel.

Wood production in Ghana is dominated by a relatively small number of large primary product producers. This production consists of lumber and veneer. It serves a lucrative export market and has traditionally involved small number of known species. For LUS to penetrate this market a suitable market strategy must be developed. A substitution strategy is recommended where knowledge of customers' preferences are used to identify and promote species which can satisfy the customers requirements. Implementing this strategy is not an easy task since end-users of traditional well-used species are reluctant to change.

Formal market research studies conducted by the project in the US and the UK revealed that the most important factor concerning potential buyers of LUS is availability of the LUS, followed by technical promotional information, availability of small trial volumes and low introductory prices (Table 1).

Table 1. Importance rating of different factors in promoting the introduction and acceptance of LUS

Factor	Importance Rating*
Availability of a reliable supply of product	6.34
Availability of technical/promotional material	5.68
Availability of small trial volumes	5.38
Low trial price	4.86
Acceptance of the LUS by an influential firm	4.82
Risk-free trial period	4.48
Certification of the LUS	4.39

*Summary rating of Ghanaian and US responses (n = 120 firms)

It was found that a reliable source of wood satisfying a given level of quality must be available before any interest in LUS will be taken seriously. Potential users also expressed a desire to have good technical data on the Lesser-Used species. This was the second most important factor. The first and second factors were more important than price. Introductory discount pricing and free trials of a limited quantity of LUS should be considered by producers as a way to stimulate the export flow of LUS.

Survey respondents in Ghana and the US were asked to rate the importance of different strategies for collecting market information (Figure 2).

Another area of importance relative to LUS is the domestic market in Ghana. Since the economics of the export flow of wood from Ghana basically determines the price of wood in Ghana, small to medium sized domestic producers of end-use products such as furniture have a difficult time acquiring first class wood. Access to reasonably priced raw material limits their growth. Moreover, without advances in technical capabilities, there is little hope that this industrial sector will be able to produce products of sufficient quality to enter export markets. After careful consideration, a marketing strategy for this sector was identified: garden furniture and decking panels.

The idea behind this plan is that the small to medium sized firm can begin to experiment with design concepts, production techniques, and distribution channels in the domestic market before moving on to exports.

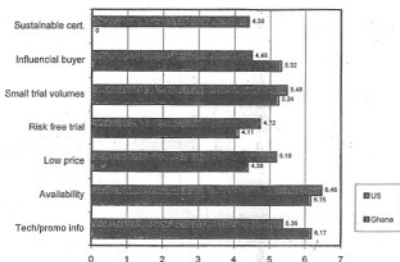


Figure 2. Importance of factors in promoting LUS. Ghana versus US.

Based on the information obtained in the surveys, a preliminary marketing strategy was developed to facilitate the introduction and acceptance of LUS from Ghana. The six factors that constitute the basis of the marketing strategy are:

1. Develop technical information
2. Develop promotional material
3. Develop a marketing strategy
4. Identify appropriate market niches
5. Recognise the importance of market information
6. Understand some important consideration.

The flow diagram in Figure 3 shows the various steps involved in introducing LUS.

The consultants for Ecology - Dr. Mike Swaine & Team; Marketing - Dr. Eastin/Appiah and Technology and Product Development - Messrs. Nilsson, Johnson and Prah will give more details on the achievements in their respective areas during this conference.

Linkages to Future Activities

While all of the stated outputs of the study have been accomplished there appears to be no natural ending to this project. The interaction of the ecology, marketing and wood processing components has led to a development of the various prototype products, and the marketing of these products is the next step. The exposure of these prototypes to the wood industry, and the general public has created a lot of interest. The training workshops have been instrumental in motivation and entrepreneurial involvement. This interest and involvement should be carried to many other ITTO sponsored projects.

We are very positive that the impact of the project results on the country's economy, as well as that of the sub-region, will be enormous.

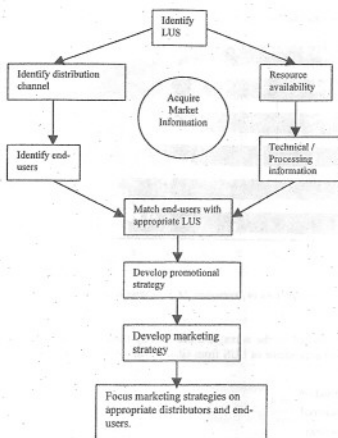


Figure 3. Flow diagram showing the various steps involved in introducing LUS.