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INTRA-REGIONAL CO-OPERATION IN DEVELOPMENT
OF PLANTATION-BASED FOREST INDUSTRIES

DU/RAF/87/117

Technical report: The development of Zimbabwe's furniture
and joinery industry in the PTA context*

Prepared for the Preferential Trade Area for Eastern
and Southern African States (PTA)
by the United Nations Industrial Development Organization,
associated agency of the Food and Agriculture Organization
of the United Nations, which acted as executing agency for the
United Nations Development Programme

Based on the work of Stephen J. Taylor,
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* This document has not been edited.

ABSTRACT

Stephen J Taylor, The Development of Zimbabwe's Furniture and Joinery Industry in the PTA context, February 1991

The report reviews the status of Zimbabwe's secondary woodprocessing industry with respect of market conditions, level of technology, product development and supply and utilization of plantation-based materials, in cross-reference with the situation in the PTA subregion. It outlines opportunities for increased exports and for exchange of experience within the PTA. The report also provides terms of reference of proposed technical assistance activities to be undertaken at subregional and national level aimed at increasing the operative efficiency of the sector.

INTRODUCTION

1. TITLE OF MISSION: Survey of Zimbabwe's secondary wood industries in the PTA context
2. MISSION EFFECTED BY: Stephen J Taylor
Consultant in Secondary Wood Industries
3. PERIOD OF MISSION: 14 to 26 February 1991
4. TITLE AND NUMBER OF PROJECT: Intra-Regional Co-operation in Development of Plantation-based Forest Industries - RAF/87/117 (UNDP-funded regional project)
5. EXECUTING AGENCY: Food and Agricultural Organization of the United Nations (FAO)
6. CO-OPERATING AGENCY: United National Industrial Development Organization (UNIDO)
7. SUB-REGIONAL INSTITUTIONAL RELATIONSHIP: Secretariat of the Preferential Trade Area for Eastern and Southern African States (PTA)
Headquarters: Lusaka, Zambia
8. OBJECTIVES OF MISSION:
 - a) To participate in a survey of existing secondary woodworking enterprises.
 - b) Assess technical, managerial and commercial situation of those enterprises within the PTA context.
 - c) To make recommendations on rationalisation and development of the enterprises (as appropriate)

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CHAPTER I - SUMMARY AND CONCLUSIONS

1. Summary

The area of Zimbabwe is approximately 390,000 sq km of which forestland is about 51% (principally savanna 'open forest' but with an estimated 101,000 ha of plantations). In 1988 the population was 9.3 m and is expected to rise to 15+ m by the year 2000. Despite one of the higher (African) population growth rates over the past decade, Zimbabwe had a GNP per capital of US \$656 (1988) putting the country in the top eight on the continent. Urban areas represented 27% of the population and if this ratio remains then by the end of the century urban population will have increased from 2.5 m to 4.1 m with a corresponding demand for furniture and joinery for both domestic and institutional needs. It is predicted that with these demographic changes not only will the indigenous hardwoods be exhausted by the year 2000, but that shortly thereafter the country would need to import plantation timber.

The furniture industry is a highly diversified one with a wide range of products and manufacturing processes including the mass production of standardised panel-based furniture using inter-changeable components. It is generally well equipped, although, as elsewhere in the region, suffering from a shortage of foreign exchange for spares and process materials.

There is a thriving export business (principally to hard-currency areas) and under the government's trade liberalization policies these exports should increase and, given appropriate PTA regional policies, also within the region.

2. Conclusions

- 2.1 Zimbabwe's secondary wood products industry is substantially a privately owned, well organised commercially orientated one.
- 2.2 It makes use of a wide range of materials: timber (hard and soft woods) and man-made board materials and plastic laminates.
- 2.3 All enterprises surveyed (see Annex I) are basically machine production orientated manufacturing in batches of standardised interchangeable components.
- 2.4 All companies use kilned timber and some have their own kilns to season the timbers cut in their own sawmills.
- 2.5 There is an effective Furniture Manufacturers' Association, which is able to represent the industry in discussions with government institutions.
- 2.6 Government policies as outlined in their latest economic plan - "Zimbabwe: A framework for Economic Reform (1991-95)" - should permit the industry to modernise and expand.
- 2.7 Several companies already export to some degree (see Annex I) to hard currency areas and with the new incentives this trade should expand and include the PTA subregion.

2.8 The industry is well enough developed technically and organizationally to be able to benefit in the very short run from management and technical training courses. The manufacturers' association would welcome and support any course of such nature.

2.9 A 'workshop' of the saw-millers and the secondary wood products manufacturers could prove valuable in respect of standard dimensions and quality standards of pine/eucalyptus boards.

2.10 Zimbabwe, with its wide range of manufacturing units employing quite modern equipment and techniques and, generally, with progressive management could provide an ideal base for a PTA management/technical training course.

CHAPTER II - FINDINGS

1. Demand and supply of furniture and joinery and general performance of the sector

1.1 The Present Situation

Zimbabwe is one of the most highly developed countries in the sub-Saharan region. Despite the failure of economic growth generally during the period 1980-89, the furniture industry continued to develop. In 1988 the population was 9.3 m of whom 27% lived in urban areas.

The country has still a significant forest area of the savanna category and quite substantial plantations of pine and eucalyptus. Both the forest industries and the down-stream wood products industries are well developed although, as with most other countries in the PTA subregion, shortage of foreign exchange over the last decade has made it difficult for the industries to repair/replace capital equipment. Nevertheless the secondary wood products industry is well placed to take advantage of new or expanded economic opportunities and some companies are already to some degree or other involved in exporting of furniture to hard-currency areas.

1.2 Future Outlook

With an expanding urban population in an increasingly liberalised trade environment, the future of the Zimbabwean furniture industry looks bright. With its generally well-equipped factories, its commercially orientated and enthusiastic

management, the industry is in a good position to take advantage of the economic opportunities, both national and international, that may present themselves over the next decade provided the access to foreign currency outlined in the government's recent policy publication materialises (Zimbabwe: A Framework for Economic Reform (1991-95)).

The country's furniture industry along with that of Swaziland has the potential to become a major exporter of (suitably designed) furniture within the PTA subregion. With forecasts that the country will become a net importer of plantation timber and board products soon after the turn of the century inter-PTA countries trade would beneficially expand.

2. External Trade

2.1 The present situation

A number of companies already export, on a regular basis, part of their output, KLEKO, WILSON GROUP, HARLEQUIN, BALDON. The majority of the exports go to hard currency countries or to S Africa. The view seems to be that there is less bureaucracy involved in selling in a 'free-market' economy than there is, in general, in attempting to export to other PTA countries, and, of course, access to part of the foreign exchange earned, enables some spares and process materials (sandpaper belts, veneers, etc.) to be purchased abroad.

2.2 Future Development

Given the government's plans to liberalise trade and relax financial controls (as outlined in their recent economic review) then there should be an expansion in exports to current markets (subject to a picking-up in world trade in general). With appropriate PTA inter-country trading incentives, including tariff reductions, and a reduction in the non-tariff bureaucratic barriers, there would be encouragement to the industry to be more active in the PTA itself.

It has to be remembered that assembled furniture is expensive to transport and is at considerable risk of damage, therefore, expansion of exports will call for either exporting of components for assembly in the recipient country or/and the redesign of products as 'knock-down' furniture for consumer assembly. The Zimbabwean industry is sufficiently well developed to tackle both these aspects of an export trade.

3. Review of Production Facilities

As will be clear from the company details which follow (Annex I) the Zimbabwe furniture industry is geared to large scale production of standard products using interchangeable accurately machined standard components. To this extent it is a very Europeanised industry. There are, consequently, many companies which have a wide range of both basic and more sophisticated machinery, use modern production planning and control techniques and strive for improved efficiency. A shortage of foreign exchange to buy spare parts/new machines/process materials has been the cause of frustration over

the past decade, but with new government policies the manufacturers are cautiously optimistic for the future.

One important characteristic of the industry is that, unlike some other African countries, there is an insistence on the use of kilned timber in order to manufacture (at whatever price level) products which will give the consumer reliable usage. For this reason several companies have installed not only their own sawmilling equipment (for hardwoods only) but also their own kilns (see Annex I). Many companies are equipped to process particle-board and to veneer it to their own specifications. Use is made of both powered and gravity conveyors, fork lift trucks and palletised components. Fully equipped spray booths are used to apply modern polyurethane lacquers to products that may have been assembled on hydraulically operated carcass clamps.

Attention is paid to quality control, although there is rarely an independent inspectorate. In some companies financial incentive schemes have been, or are being, introduced to encourage operator productivity and thereby achieving lower unit costs of production.

4. Product Design

The secondary wood products industry in Zimbabwe is very wide ranging, from inexpensive pine tables and chairs, to expensive hand carved hardwood dining room suites and high quality upholstery. Office, hotel and general contract furniture as well as domestic furniture is available. Whilst some companies produce designs copied from 'foreign' catalogues, others have drawing offices where new standard products are

designed or products are developed for particular clients. As a whole the industry is able to offer both traditional and modern assembled products and, in some instances, knock-down furniture.

5. Timber Utilization

The industry still uses a very large amount of solid hardwoods, but increasingly there is a movement towards the use of veneered panels (particle board, plywood, etc.) and the industry is well aware that supplies of hardwood are limited and that increasingly plantation pine and eucalyptus will have to be used. It is worth noting that the country will, within the next decade, become a net importer of hardwood (from Mozambique), and it is predicted in the Forestry Commission, even a net importer of pine by the year 2000.

Formal meetings between the representatives of the forest industries and the furniture manufacturers to discuss mutual needs and problems would be most beneficial if they could lead to the development of more appropriate dimensional and quality standards of sawn-wood. That, in turn, would lead to lower material wastage in the furniture factory and consequently lower material unit-costs of manufacture.

6. The Development of the Secondary Wood Industry

The industry, being already well advanced will continue to develop (albeit somewhat more slowly) as the industry in the more industrialized countries develop. Thus the next stage in the modernisation of the Zimbabwe furniture industry will be (subject to access to foreign exchange) the introduction of computer

numerically controlled wood-working machinery for the more efficient production of precision-machined components. These machines allow for greater flexibility in production, make small batch production economically viable (reduced down-time) and consequently permit a wider range of products to be offered.

The industry is on the threshold of a bright future in terms not only of scale of output, but also technologically.

7. Training

Despite, or perhaps because of, its advanced (by African standards) manufacturing procedures, the furniture industry in Zimbabwe feels itself in real need of good middle/senior/technical management training to take full advantage of modern manufacturing techniques and procedures, and systems of planning and control (see Chapter III). The industry has a well-established manufacturers' association who are confident that they would have no difficulty in filling all the places available on such courses - especially if the courses were national ones.

CHAPTER III - RECOMMENDED FOLLOW-UP

OBJECTIVES	OUTPUTS	MAIN ACTIVITIES	UNIT/RS
<p>Objective 1</p> <p>To expand the manufacturing know-how of an initial group of managerial staff in the furniture and joinery industry sector from Zimbabwe and the other PTA countries aimed at optimizing the benefits of industrialized wood processing.</p>	<p>Output 1.1</p> <p>60 plant managers and production supervisors gained an appreciation of all critical aspects involved in the serial production of standard furniture and joinery, towards increasing productivity, quality standards and overall operative efficiency. The areas of expanded know-how include:</p> <p>selection of machinery; selection of cutting tools; inter-changeability of parts and quality control; product costing; tool and machine maintenance; general techniques of surface staining and coating; plant layout; product design as applied to industrialized production; quality standard specification.</p> <p>(Objective 1 and Activities 1.1 to 1.3 refer)</p>	<p>Activity 1.1</p> <p>To survey proposed host facilities in Kenya and Malawi in order to discuss Seminar arrangements, prepare a tentative Work Programme and specifications of production supply items (such as quality control instruments, jig construction, special cutting tools, etc.) to be purchased under the project for seminar demonstration work.</p> <p>Activity 1.2</p> <p>To prepare terms of reference for the Lecturers and final Work Programme.</p> <p>Activity 1.3</p> <p>To conduct 2 General Seminars of two weeks each with 10 participants at each seminar in Malawi and Kenya.</p>	
<p>Objective 2</p> <p>To provide a basis for:</p> <p>(a) An increasingly relevant role on the part of Polytechnics and Technical Schools in Zimbabwe and the other PTA countries in stimulating a proper transition of the furniture and joinery sector from artisan methods to the industrial system; and</p> <p>(b) A permanent reference source on plant operation for the management of furniture and joinery plants.</p>	<p>Output 2.1</p> <p>Produce a set of woodworking Training/Reference Manuals covering the main topics dealt with in Output 1 above.</p> <p>(Activities 2.1 and 2.2 refer)</p>	<p>Activity 2.1</p> <p>Collect and review woodworking text books dealing with industrial techniques, in use in Polytechnics and Technical Schools in the PTA.</p> <p>Activity 2.2</p> <p>Adaptation of existing UNIDO woodworking manuals and preparation of new ones, as required, to cover the topics in Output 1.1</p>	
<p>Objective 3</p> <p>To provide a decision-making basis for the rehabilitation of Zimbabwe's existing production lines for the manufacture of panel-based furniture in view of their potential PTA regional complementary role.</p>	<p>Output 3.1</p> <p>Produced reports with an appraisal of the constraints preventing the full utilization of the existing machinery at the plants surveyed. The reports are also to provide details and cost of corrective steps to be taken to rehabilitate the equipment which is not in operating condition.</p> <p>(Activity 3.1 refers)</p> <p>Output 3.2</p> <p>Produced a pre-feasibility study for setting up a typical self-contained furniture manufacturing operation based on the type of panel-line equipment available. The study will include: survey of general market conditions; definition of typical products to be produced; material input requirements; general factory building requirements; general ancillary equipment needs; manpower requirements; general assessment of financial viability; details of further technical assistance requirements. (Activities 3.1 to 3.5 refer)</p>	<p>Activity 3.1</p> <p>To conduct a survey of the panel-line machinery and provide a full inventory of the machinery and accessories available.</p> <p>Activity 3.2</p> <p>To collect and analyze the local data necessary for the preparation of a pre-feasibility study.</p> <p>Activity 3.3</p> <p>To adopt, for the purpose of preparing a pre-feasibility study, a typical panel-based regular furniture system suitable for a wide range of uses (wardrobes, bookcases, living room and dining room cabinets, etc).</p> <p>Activity 3.4</p> <p>To prepare a typical pre-feasibility study on the basis of the above.</p> <p>Activity 3.5</p> <p>To elaborate details of technical assistance required to start regular serial production of panel-based furniture.</p>	

CHAPTER III - RECOMMENDED FOLLOW UP

OBJECTIVES

OUTPUTS

MAIN ACTIVITIES

INPUTS

Objective 4

To provide the basis for the improvement of tool maintenance methods of the furniture and joinery industry in Zimbabwe and in the other PTA countries in order to attain: longer life span of costly imported machine cutting tools; quality improvement of machined parts; reduced safety hazards in the use of machinery; and reduced material reject rate.

Output 4.1

Three Project Profiles on the setting up of tool maintenance units within small- and medium-scale furniture/joinery plants, or an self contained Tool Maintenance Centre. The Profiles include: workshop layout; specifications and estimated cost of machinery, accessories and supplies for a two-year operation; specifications of storage arrangement for tools and supplies; lighting requirements; etc. (Activity 4.5 applies)

Output 4.2

Trained 24 senior technicians in carrying out the maintenance of machine cutting tools in use in the furniture/joinery industry such as: planing knives, moulding cutters, routing cutters, standard circular saw blades, carbide tipped circular saw blades, blades for band resawing, mortising chains, square chisel mortiser bits, and boring bits. The participants would subsequently act as counterparts in similar courses to be conducted at a national level. (Activities 4.1, 4.2, 4.3, and 4.4 refer)

Output 4.3

Extended utilization of the Project Profiles and Data Sheets prepared for the training course for the benefit of the PTA furniture/joinery industry as a whole. (Activity 4.6 refers)

Objective 5

To expand the capability of efficiently utilizing, in Zimbabwe and in other PTA countries fast growing plantation timber species (such as Pinus patula, Eucalyptus spp and Cupressus lusitanica) in the furniture and joinery industry as well as in building construction.

Output 5.1

Report on the use of Eucalyptus in the PTA and overseas for the production of furniture, joinery, structural building components and wood-based panels. (Activities 5.1, 5.2, 5.3 and 5.6 refer)

Output 5.2

Manual on standard wood treatment and wood processing requirements of Eucalyptus, Pine and Cypress, to cover subjects such as: kiln drying; cutting speeds; cutting-tool geometry with respect to main wood machining operations; choice of surface coating material and methods; dipping against blue stain and pressure treatment of Pine; choice of adhesives for standard and structure applications; choice and dimensioning of joints in chair manufacture. The manual shall also propose a set of minimum quality standards for furniture intended for intra-PTA trade and for government contracts. (Activities 5.4 and 5.6 refer)

Output 5.3

Reference Manual on the design of standard roof trusses made of Pine and Cypress, and on the design and fabrication of roof trusses made of Eucalyptus poles as practised in Ethiopia. (Activities 5.5 and 5.6 refer)

Activity 4.1

To survey the tool maintenance workshop of the Warea Furniture Factory and the WUARC Tool Maintenance Centre of Addis Ababa which, being representative in the PTA of well equipped tool maintenance facilities for the furniture and joinery industry qualify for hosting the Tool Maintenance Training Course.

Activity 4.2

To prepare specifications of supplies and accessories to be purchased for the purpose of conducting the training courses.

Activity 4.3

To prepare training Data Sheets and visual aids as a basis for conducting the maintenance courses.

Activity 4.4

To conduct 3 training courses on Tool Maintenance Techniques of one month duration each for 8 PTA trainees at a time.

Activity 4.5

To prepare Project Profiles as a reference on the setting up of tool maintenance units.

Activity 4.6

To reproduce and distribute widely, in the secondary woodprocessing industry, the Project Profiles and Data Sheets prepared under the project.

Activity 5.1

Review the experience gained by the International Timber Group in Kilimo, Malawi and PZ Woodwork PTY, Mbabane, Swaziland, in the manufacture of furniture components, joinery and structural building components made of laminated Eucalyptus.

Activity 5.2

Review the experience gained by ETHALCO and ECAFECO plants in Addis Ababa, Ethiopia in the manufacture of fibreboard and particle board made of Eucalyptus.

Activity 5.3

Compile information on overseas experience in the utilization of Eucalyptus in the primary and secondary wood processing industry.

Activity 5.4

Compile information from African and overseas research institutions, including Bureau of Standards, on woodprocessing requirements and durability and performance standards as applicable to the use of Eucalyptus, Pine and Cypress in furniture and joinery production and structural building applications.

Activity 5.5

Compile information from African research institutions and ministries of works on the use of Pine, Cypress, and Eucalyptus in the design and fabrication of roof trusses.

Activity 5.6

To reproduce the report and manuals under outputs 5.1, 5.2 and 5.3 for wide distribution to the industry, wood research institutions and ministries of work in the PTA.

CHAPTER III - RECOMMENDED FOLLOW-UP

OBJECTIVES

OUTPUTS

MAIN ACTIVITIES

INPUTS

Objective 6.1

To enable the saw-milling forest industries to become more aware of:

- a) The dimensional needs of the furniture/timber engineering industries in respect of solid timber, particle board, plywood, fibre-board.
- b) The importance of appropriate and reliable quality grading.
- c) The critical importance of adequately kilned (seasoned) timber in furniture construction.
- d) An opportunity to obtain a higher price for some of its output.

Objective 6.2

- a) To make the secondary wood products industry aware of the natural and physical constraints of the basic material that the millers have to process.
- b) To familiarise them with the advantages/disadvantages of using man-made board.
- c) To re-emphasise the benefits derivable from the use of properly seasoned (kilned) timber.

Output 6.1

15 Influential forest products managers will better appreciate the needs of the secondary wood products industries (and in satisfying such needs be able to obtain a premium price for the material).

Output 6.2

15 Secondary wood products managers will be better able to design products to utilize more efficiently the better quality and more suitable output of the saw-millers. They will themselves better appreciate the benefits to themselves and the final consumers arising from the use of properly kilned timber.

Output 6.3

General an on-going dialogue between these producers (the saw-millers) and their consumers (the down-stream wood products industries).

Activity 6.1

Survey the saw-milling industries in the PTA countries to select personnel able to be articulate on the process of selection and conversion of both softwood (and as appropriate) hardwood logs and prepared to listen to the needs of the down stream industries.

Activity 6.2

Select from previously surveyed secondary wood products industry suitable managers able to articulate their material needs (in quality terms) and prepared to listen to and consider the problems of the foresters.

Activity 6.3

Select suitable wood-science trained personnel able to present technical information comprehensively.

Activity 6.4

Conduct a prototype seminar of 30 participants in one of the PTA countries.

KLEKO (PVT) LTD
HARARE

Mr Dennis Martin - Managing Director

A privately owned company manufacturing a wide range of domestic furniture and joinery mainly in pine. Also timber merchants.

- Products - Industrial cable drums, 'Gang-nail' truss ed rafters, pallets, battery boxes, doors, kitchen units, tables, etc.
- Markets - principally domestic through retailers, some exports of laminated shelving to S Africa.
- Production Process - batch production of machined components, use of jigs. Some made-to-order furniture.
- Material - Principally plantation pine (400 m³ per month)
- Timber Conversion Factor: max 7½% waste.
- Moisture Content - target 10-12% - kilned timber in short supply.
- Machinery - a good selection of basic woodworking machinery including RF (Radio-Frequency) press.
- No of employees - 180. Approx 15% skilled, 45% semi-skilled and 40% general labourers.
- Product costing - not available.
- Problems - Shortage of capable senior supervisors. Foreign exchange for spares/process materials, etc.

J W WILSON GROUP
HARARE

Mr James Wilson - Managing Director

This privately owned family managed furniture company is one of the largest in the country. It has two main factories at Harare and Norton. It manufactures a wide range of domestic and office furniture in both hard and soft woods and man-made panel products. It has its own forest concession (hardwood), sawmills and kilns.

- Products - Comprehensive range of dining and bedroom furniture. Considerable use of carved panels. Range of office furniture - desks and storage.
- Markets - principally Zimbabwe, but some exports to the USA (plans to expand this) and to UK.
- Production Process - Machine orientated large batch production of standard interchangeable components.
- Material - Mainly hardwoods (Muninga, African Mahogany, Mugula). Some pine, particle board (Zimbabwe), Hardwood veneers.
- Timber Conversion Factor: Not available.
- Moisture Content - 10-12%
- Machinery - a very wide range of basic machinery plus many more sophisticated pieces of equipment eg carving machines, copying lathes, carcass clamps, automatic kilns, etc.
- No of employees - Group: 400. Foremen, crew leaders, skilled machinists and carpenters, hand carvers, labourers. Bonus scheme based on turnover targets.
- Product costing - not available.
- Problems - Shortage of 'clear' pine kilned.
Need more technical expertise.
Worker training.
Management training.

Note:

This company is sufficiently well developed in manufacturing techniques and commercial expertise that it is actually aware of the limitations to its expansion. Given the opportunities to send candidates to management/technical training courses, senior management believes that efficiency benefits would rapidly follow.

ANNEX I

HARLEQUIN FURNITURE MFRS (PVT) LTD
HARARE

Mr Stanley Harris - Managing Director

A private company manufacturing a full range of domestic furniture using principally pine, but also some hardwoods (both indigenous and European).

- Products - Dining room and bedroom furniture, upholstery.
- Markets - Mainly Zimbabwe, but some exports to S Africa.
- Production Process - Machine batch production of standard products of interchangeable components. Use of jigs. Manufacture to order and for stock.
- Material - Pine, some Eucalyptus, Muqwa (Muninga), polyurethane foam, hide, oak and mahogany.
- Timber Conversion Factor: Not available.
- Moisture Content - 10-12%
- Machinery - a good range of basic woodworking machinery.
- No of employees - 180 (Skilled, semi-skilled, labourers).
- Product costing - not available.
- Problems - Shortage of foreign exchange for spares and process materials.
Tool-room equipment.

ADAM BEDE FIELD FURNITURE (PVT) LTD
HARARE

Mr Martin Davidson - Managing Director

A privately owned company (part of the Field Consolidated Group) manufacturing a range of cabinet and upholstery furniture in a variety of timbers.

Products - Dining and bedroom and occasional cabinet furniture. Upholstery.

Markets - Mainly Zimbabwe. PTA difficult for currency reasons.

Production Process - Machine batch production of standard products of interchangeable components. Use of jigs and moulds.

Material - Muqwa (Muningwa), Eucalyptus (Saligna), Mahogany, Pine.

Timber Conversion Factor: Not available.

Moisture Content - 10-12%

Machinery - a good range of basic woodworking machinery becoming obsolete. Own kilns.

No of employees - 110 plus casuals.

Product costing - not available.

Problems - Shortage of foreign exchange for spare/process materials/new machinery. Shortage of skilled tradesmen. Need for technical expertise.

Note: This company would see itself benefiting well from management/technical training courses. It would also welcome expertise for on-the-job training.

ANNEX I

BALDON FURNITURE (PVT) LTD
HARARE

Mr Ben Balneaves Jnr - Director

A privately owned company manufacturing principally for the office market with some hotel contract business. Some children's furniture.

- Products - Cabinet and upholstered goods for the office market. A design service available to clients.
- Markets - Mainly Zimbabwe, but some 15% of turnover is exported to S Africa, Botswana, Zambia and Malawi.
- Production Process - Machine batch production of standard products of interchangeable components. Use of machinery jigs. Use of technical drawings showing details of construction.
- Material - Indigenous hardwoods, imported hardwoods, plantation pine.
- Timber Conversion Factor: Not available.
- Moisture Content - 12%
- Machinery - a good range of updated basic machinery plus some sophisticated equipment.
- No of employees - not available.
- Product costing - not available.
- Problems - Shortage of good supervisors (to follow on).
Inter PTA trade hampered by poor roads.

FORESTRY COMMISSION
MUTARE

Mr Bill Johnson - Manager Forest Products

A state owned business converting plantation timber to boards and manufacturing joinery and industrial timber products.

Products - Glulamated timber beams, finger-jointed constructional timber, fruit boxes, tobacco cases, mouldings, doors.

Markets - Zimbabwe

Production Process - Basic saw milling and basic wood machining/fabrication of a limited range of standard products in batches to order.

Material - Plantation pine.

Timber Conversion Factor: Not available.

Moisture Content - Not available.

Machinery - Basic secondary wood conversion machines, finger jointing and gluing machines, drying tunnels, kilns.

No of employees - 400 (of whom 138 are production workers)

Product costing - not available.

Problems - Kilning capacity.
Space for expansion (target 30-35% over 2/3 years).

ANNEX II

LIST OF PEOPLE MET AND INSTITUTIONS VISITED

MR GARURA -	Ministry of Environment and Tourism
MR MAUWA -	Deputy Secretary Ministry of Industry and Commerce
MR K K KUJINGA -	Deputy General Manager, Forestry Commission
MR MATELLI -	Director Forest Industry Training Centre (FITC)
MR P VELHO -	Managing Director, Mashonaland Furniture, Harare
MR J WILSON -	Managing Director, Wilgro Ltd, Harare
MR A WILSON -	Production Director, Wilgro Ltd, Norton
MR R C POPE -	General Manager, Home Furnishers Ltd, Bulawayo
MR D MARTIN -	Managing Director, Kleko (PVT) Ltd
MR S HARRIS -	Managing Director, Harlequin Furniture Ltd, Harare
MR M DAVIDSON -	Managing Director, Adam Bede Field Furniture Ltd, Harare
MR B BALNEAVES JNR -	Director, Baldon Furniture Ltd, Harare
MR B JOHNSON -	Manager, Forest Products, Forestry Commission, Mutare