



TOGETHER
for a sustainable future

OCCASION

This publication has been made available to the public on the occasion of the 50th anniversary of the United Nations Industrial Development Organisation.



TOGETHER
for a sustainable future

DISCLAIMER

This document has been produced without formal United Nations editing. The designations employed and the presentation of the material in this document do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations Industrial Development Organization (UNIDO) concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries, or its economic system or degree of development. Designations such as “developed”, “industrialized” and “developing” are intended for statistical convenience and do not necessarily express a judgment about the stage reached by a particular country or area in the development process. Mention of firm names or commercial products does not constitute an endorsement by UNIDO.

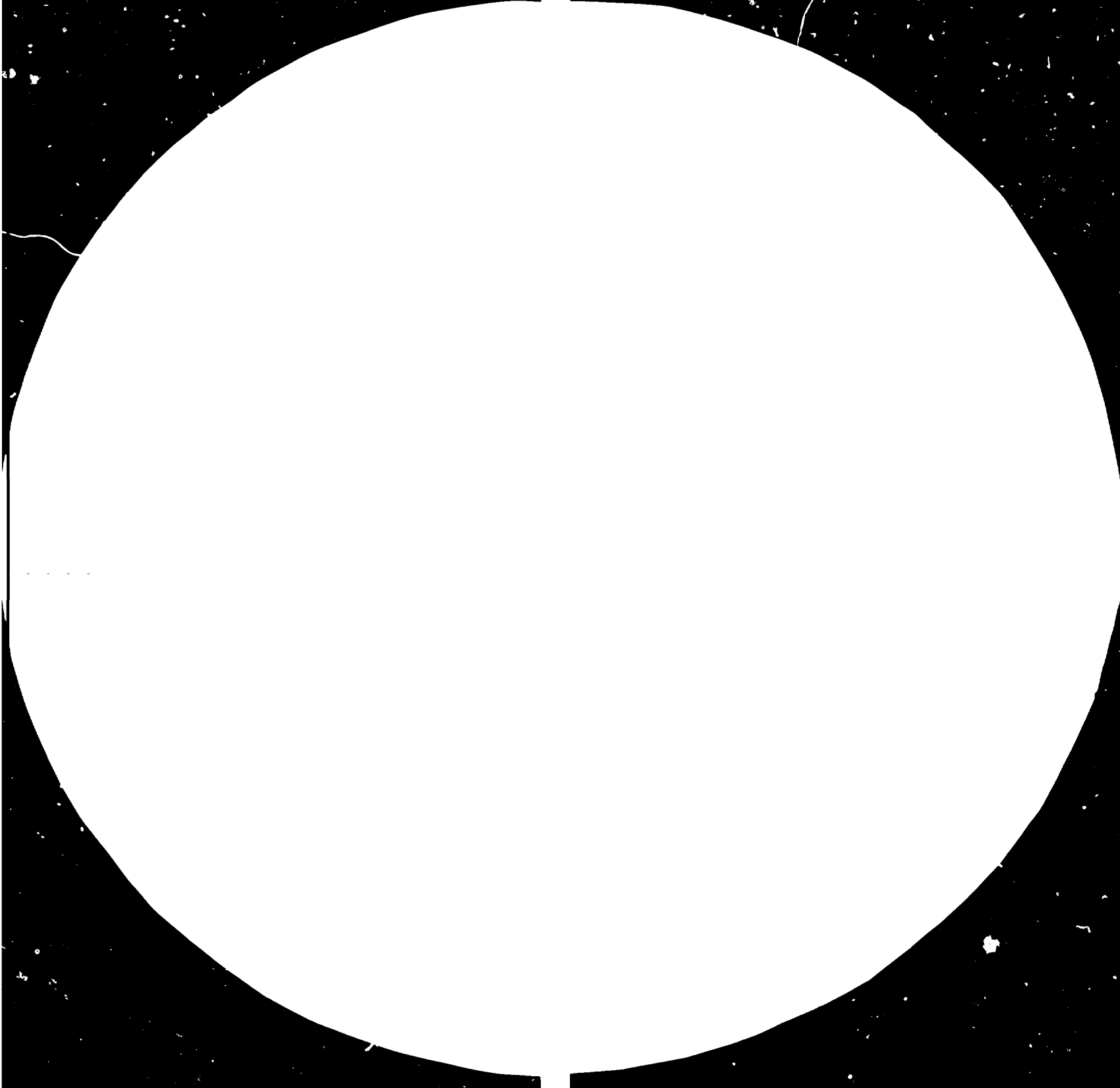
FAIR USE POLICY

Any part of this publication may be quoted and referenced for educational and research purposes without additional permission from UNIDO. However, those who make use of quoting and referencing this publication are requested to follow the Fair Use Policy of giving due credit to UNIDO.

CONTACT

Please contact publications@unido.org for further information concerning UNIDO publications.

For more information about UNIDO, please visit us at www.unido.org





2.8



3.2



4.0



5.0



MICROCOPY RESOLUTION TEST CHART

NATIONAL BUREAU OF STANDARDS-1963-A



12549



UNITED NATIONS INDUSTRIAL DEVELOPMENT
ORGANIZATION

FOOD AND AGRICULTURE ORGANIZATION
OF THE UNITED NATIONS

FIRST CONSULTATION
ON THE WOOD
AND WOOD PRODUCTS INDUSTRY

Helsinki, Finland
19 - 23 September 1983

Distr.
LIMITED

ID/WG.395/1
25 May 1983

ORIGINAL: ENGLISH

PROMOTION OF COMMERCIALY LESS
ACCEPTED SPECIES *

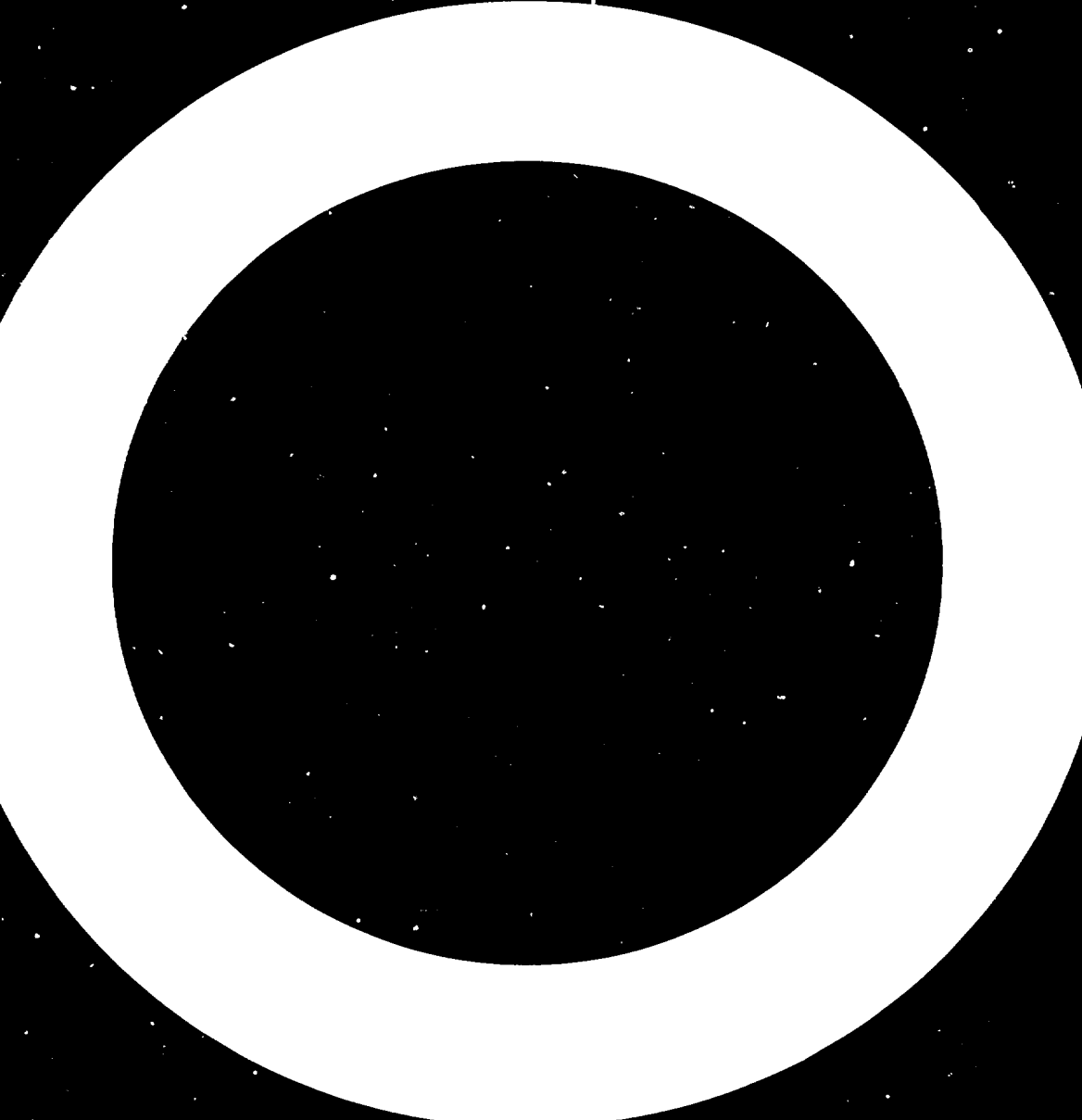
by

Oswin Peter Hanson **
UNIDO Consultant

53

* The views expressed in this paper are those of the author and do not necessarily reflect the views of the secretariat of UNIDO. This document has been reproduced without formal editing.

** Deputy Director, Timber Research and Development Association (TRADA), England.



CONTENTS

- 1 INTRODUCTION

- 2 THE COMMERCIALY LESS ACCEPTED SPECIES
 - 2.1 The essential problem
 - 2.2 Designation, definition and categorisation
 - 2.3 The occurrence of commercially less accepted species
 - 2.4 Information needs
 - 2.5 Possibilities of grouping

- 3 UTILISATION
 - 3.1 Classification of uses
 - 3.2 Log export
 - 3.3 Primary processing
 - 3.3.1 Sawwood
 - 3.3.2 Veneer and plywood
 - 3.3.3 Other primary processing
 - 3.4 Secondary processing
 - 3.4.1 Of sawn timber
 - 3.4.2 Of other wood products
 - 3.5 Energy and fuelwood

- 4 INDUSTRIAL MARKETING
 - 4.1 General considerations
 - 4.2 Sawwood on export markets
 - 4.2.1 Current market situatin
 - 4.2.2 Introduction of new species
 - 4.3 The question of quality
 - 4.3.1 General
 - 4.3.2 Standardisation
 - 4.3.3 Quality certification

- 5 GENERIC PROMOTION
 - 5.1 General considerations
 - 5.2 Promotional activities
 - 5.2.1 Marketing research
 - 5.2.2 Publications
 - 5.2.3 Information
 - 5.2.4 Education
 - 5.2.5 Development
 - 5.2.6 Representation
 - 5.2.7 Publicity
 - 5.3 Promotional guidelines

6 FOREST INDUSTRY STRATEGY

- 6.1 Economic optimisation
- 6.2 Forestry aspects
- 6.3 Home use or export
- 6.4 Government incentives

7 ACTION PROGRAMME FOR THE COMMERCIALLY LESS ACCEPTED SPECIES

1 INTRODUCTION

This background document to the problem of the promotion of commercially less accepted species is based on the discussion paper presented to the Global Preparatory Meeting held in Vienna, Austria on 24 - 26 January 1983 entitled 'Overall view of the problems connected with the promotion of commercially less accepted species'. In the preparation of this document note has been taken of the discussion which took place at that meeting.

Since the term 'commercially less accepted species' does not in itself characterise the full problem that these species represent, Section 2 commences by stating the essential problem and then defines and further discusses the essential nature of the commercially less accepted species followed by data on their occurrence in Amazonian forests to illustrate the extent of the problem. There is then some discussion of information needs in the context of both occurrence and technical properties.

Section 3 entitled 'Utilisation' classifies the full range of timber uses, divided into primary and secondary processing. The problems of employing the commercially less accepted species for these uses are briefly discussed.

Section 4 entitled 'Industrial marketing' commences with some consideration of the more general problems of marketing the whole range of timber products. Sawn timber is chosen for more detailed consideration including the classification of timber species according to end-use in order that less accepted species may be seen in the context of established species. There is discussion of the problems of introducing new species and some indication of the more important factors that may determine the success of efforts to introduce them. One particular marketing question is the question of product quality.

Industrial marketing can be assisted by generic promotion of the material and this is the subject of Section 5.

Forest industry strategy is the subject of Section 6, being looked at in terms of economic optimisation, forestry aspects, the choice between home and export markets, and the provision of Government incentives towards the greater use of commercially less accepted species.

Section 7 provides a list of possible components of an action programme for the promotion of the commercially less accepted species.

2 THE COMMERCIALY LESS ACCEPTED SPECIES

2.1 THE ESSENTIAL PROBLEM

A problem shared by many tropical producing areas is the small fraction of available wood per hectare that is actually extracted during harvesting.

For example, FAO in its recent study of tropical forest resources estimated that the volume per hectare actually commercialised from undisturbed productive closed broad-leaved forest is on average 8.4 cbm from a volume of 157 cbm, or just 5.25 percent.

The inevitable result of this low percentage commercialisation is a high unit cost of extraction which can seriously prejudice the use of constructional and utility woods on local markets. The benefit obtained from the resource by the producing country is well below what might reasonably be expected, and reserves will be more rapidly depleted.

It would be simple to say that a commercially less accepted species is one that is left in the forest. A better definition is 'a species that is not being put to best advantage'. This would take into account a realistic appraisal of the potential value of a species and could possibly describe a species that was being extracted but under-sold. It would also distinguish from the very many unused species those that are most worthy of special attention and force consideration of the research, investment and promotion that would be necessary to exploit them effectively.

The species that are then most worthy of attention are those that might be marketed as logs, sawn timber or plywood on either an individual species basis or within a species grouping suitable for these same purposes. This would then leave for consideration the suitability of mixed species for processes involving chipping or defibration.

The overall marketing objective should be to maximise the benefit from the mix of species available by satisfying the most appropriate demands. This is likely to require choices between available markets and the promotion of others by commercial or industrial development. The optimum use of the resource will be markedly different according to whether it is being cleared or selectively felled, and in the latter case it may make some further difference whether the forest is to be put under management to encourage the optimisation of its later value when relogged.

2.2 DESIGNATION, DEFINITION AND CATEGORISATION

The designation 'commercially less accepted species' is being used at this Consultation to categorise a variety of species which for one reason or another are not being put to their best advantage. These wood species have at times been variously described as secondary species, lesser-known species and lesser-used species. To call them 'secondary species' is inadvisable from a marketing point of view,

but this is nevertheless a fair description of many of them which suffer from some disadvantageous technical property or are not of a sufficiently high occurrence to support widespread marketing.

The lesser known tag has the merit of emphasising the fact that all species need to be adequately known both as regards occurrence and technical and decorative properties. Its use led to calls for more research into technical properties and to a lesser extent for greater species determination during the carrying out of inventories of growing stock. While it is probably now unrealistic to expect the discovery of some general purpose species of significant occurrence, it may well be that such research will result in the identification of species with certain outstanding properties along with adequate occurrence which can be successfully established on the market. It is however certain that there are many species with useful properties and significant occurrence which are likely to remain lesser used unless special marketing consideration is given to them. Such attention may of course fail to achieve significant improvement, particularly in the face of ready availability of preferred species.

The main virtue of the designation 'commercially less accepted species' is that it draws attention to the necessity for a realistic commercial appraisal of the value of a species in order to determine whether it is being put to best advantage or not. Such an appraisal must be made against the background of the general level of prices of competitive species established on the market, though it should certainly take into account realistic prospects in the foreseeable future.

It is tempting to try to write a more comprehensive definition of the commercially less accepted species but these species fall into a number of groups and no one definition suits them all.

It is helpful to group species generally, whether established or not, into three classes;

- 1) those that are able to be marketed on an individual species basis for use as sawnwood, veneer or plywood, on the basis of their technical properties and good occurrence,
- 2) those that are able to be marketed within a species group for one or more of the same purposes as 1) on the basis of satisfactory technical properties, but low occurrence as individual species,
- 3) those that are only likely to be able to be marketed for use as raw material for processes involving chipping or defibration.

According to changing circumstances and the level of economic activity some species may move from one class to another and dividing lines will typically be blurred. Typical kg size and form, as well as species, will be factors in classification, which may differ from one producing area to another and likewise, from one consuming area to another depending on the competition. Most of the established sawn timber species are class 1 but there are established species groups such as meranti and lauan which nevertheless command around

average prices while being class 2. This class 2 concept applies not only to species that are sold together but also to users such as plywood manufacturers who can specify broad selections of species for usages such as core veneer.

A species may be reckoned to be put to its best advantage when the financial contribution per unit quantity is maximised on the basis of current market opportunities. The price levels that govern the optimisation of contribution are of course influenced by the price levels of established wood species and other competitive materials

There are thoroughly established species in all three groups that make an effective financial contribution but most established species fall in the first category. Nevertheless the range of prices within this category is large since they certainly include the low priced constructional softwoods of the northern hemisphere.

The commercially less accepted species may be categorised as follows in the context of the above classes:

- a) those that might realistically take their place as individual species in 1)
- b) those that might reasonably be grouped in 2)
- c) those that must realistically be considered as falling in 3)

Those a) species which might possibly take their place in class 1 are often, and correctly, the subject of emphasis in any discussion of commercially less accepted species, and the correct process of consideration of these species may be suggested as follows:

- 1) Establish what information on occurrence and properties is available, and supplement this where practicable or necessary.
- 2) When reasonable market prospects can be foreseen, promote according to the best available methods and on the basis of the information available from (1).
- 3) Where reasonable prospects cannot be foreseen, or where promotion fails to put the species to acceptable advantage, include it within an action programme for commercially less accepted species which should include further research along the lines of (1) where that step may not have been adequately carried out or may have been found to be impracticable in the first place.

The market for timber, as for most raw materials, is affected by economic cycles of several years' duration. Typically, interest in lesser-used species increases on the upturn of the cycle and collapses on the downturn when the market can supply all needs in preferred species and before the problems of new species are likely to have been wholly overcome and user loyalty established. It must make sense for producers to make greater efforts to satisfy reduced demand from a smaller resource by extracting and marketing more

timber from less forest area. The greater use of currently unused or lesser-used species is crucial. The problems of achieving this by substitution of lesser-used species for established ones are enormous, with both internal competition within the international timber trade and external competition with other materials. The alternative strategy of expanding the market for tropical wood in ways that will absorb currently less accepted species must have attractions. As things stand, the rate of introduction of new species has actually declined during the world recession. While one might expect the penetration pricing of new species to excite interest in hard times, the operating costs associated with these species are no lower than with established species and possible price differentials are limited.

2.3 THE OCCURRENCE OF COMMERCIALY LESS ACCEPTED SPECIES

It was the early exploitation of tropical forests that divided species into the primaries and the secondaries based largely upon occurrence. It was the large numbers of small quantities of individual species that presented a problem and led to the selective or highly selective felling of the few dominant species with useful properties that did not present the same problem. Despite this, progress in the greater use of the forest resource must come by enabling the better and wider use of species which are currently less commercially accepted. This would increase the volume and value extracted per hectare thus lengthening the lifetime of the natural forest and reducing the unit cost of extraction. The progressive reduction in the availability of established species should facilitate the marketing of a wider range of species. Alternatively, wider marketing could lengthen the lifespan of established species. However the diversity of the species composition of heterogeneous forests and their dispersal through the forest continues to create problems that need to be solved.

If one takes the South American tropical moist forests as the main example of this problem, a comprehensive study of these forests was carried out by FAO and the results published in 1976 (The marketing of tropical wood, Wood species from South American moist forests, Erfurth and Rusche). Little better can be done here than to quote a number of general conclusions that they drew from the experience and data they had obtained:

- i) the number of tree species growing on a given forest area is high, but a major portion, two-thirds or more, of the standing volume is formed by 30 to 50 species only, out of which few species may be considered as dominant;
- ii) there are considerable variations from place to place in the botanical composition of the rain forest. These local variations entail diversifications in wood properties which have a particularly unfavourable impact on utilization;
- iii) the growing stock may vary between 100-270 m³/ha;
- iv) uncontrolled activities have often changed natural vegetation

patterns. A considerable portion yet to be defined of the original forest cover has been degraded through shifting cultivation and other uncontrolled activities;

v) the volume of commercial wood removed from natural forests may in a few cases exceed 40 m³/ha, but ranges normally between 5 and 20 m³/ha;

vi) there are about 470 wood species which are more or less known to the trade; of which about 210 are regularly used in appreciable quantities, and about 260 species are less used.

The 210 species referred to above by FAO reduce to about 125 commercial species, treating as one species those individuals that are grouped together under one FAO pilot name.

Of these 125 species 65 were relevant to Brazil and of these 28 were in significant production, but 5 species represented over 50 percent of production and these corresponded in broad terms with exports.

There has more recently been a report "Programa de entrepostos madeireiros para exportacao (PROMAEX)" by the Instituto Brasileiro de Desenvolvimento Florestal (IBDF, Brazil) on proposals for the greater promotion of species from the Brazilian Amazon region and this describes the current use of less than 100 species altogether. Less than 40 species are sold on a national level and only a fraction of these are exported. One single species represents 18 percent of local sales, 22 percent of national sales, and 64 percent of exports.

Another recent report "Grupamento de Especies Tropicais da Amazonia por similaridade de caracteristicas basicas e por utilizacao" by The Superintendencia do Desenvolvimento da Amazonia (SUDAM, Brazil) has concerned the species to be found most commonly from the state of Para which is currently the largest source of Amazonian timber. This report analyses the results of 79 inventory studies from which 148 species were considered to be significant. Of these the report picks out only 9 species as having particular commercial significance, and 5 more might reasonably be added as having moderately widespread distribution together with high incidence in several areas. Of these 14 species 10 are of high density (that is greater than 700 kg/cbm). This demonstrates the fairly typical importance of being able to cope with higher density species and this aspect of the problem of commercially less accepted species is dealt with further in the next Section .

The Para Report groups the 148 species into 4 categories depending upon likely suitability for markets. The following table indicates the categories and shows how many of the 148 and the 14 species come into the several categories. The best category for export promotion (that is number 1) contains species that certainly require considerable promotion and none of these would be considered to be fully established species on export markets.

GROUP	Total number of species considered to be significant	Number of species of commercial occurrence	Number of high density species among the 14 listed
1 Suitable for national and export markets	40	4	4
2 Suitable for national markets with export possibilities	31	3	3
3 Suitable for regional use with national market possibilities	51	6	2
4 Suitable for local use only	26	1	1
TOTALS	148	14	10

This sort of data emphasises the problems that many countries will encounter in coping with the large numbers of small quantities of less accepted species that exist in their forests, and the same problem will apply to forests that are being logged over after having previously been cut selectively for the species that were most desirable in previous times.

2.4 INFORMATION NEEDS

Continuing emphasis needs to be placed on the importance of correct information being available and being in the hands of the right people.

A great deal of information concerning the technical properties of many hundreds of species is already available from research establishments around the world. Best use will be made of future limited research resources if duplication is avoided and trouble is taken to identify the true gaps in current information. Priority should be given to the determination of likely successful usage and to the channelling of maximum effort into the provision of the information that the likely user will require. For example

research in depth into the mechanical properties of a particular species in the solid form may be largely wasted if the eventual utilisation of the species involves chipping, defibration or pulping.

It should also be recognised that it is the eventual user who will finally become the expert in the manufacturing properties of utility species. He may well be assisted by research in depth into those properties by a research institute but the need in the first place is the successful introduction of the species to him for practical trial. Immediate research should be that which will help to steer such a trial towards a successful conclusion. In the case of sawn timber such research might well concern drying or machining properties, or perhaps moisture movement, rather than strength properties. On the other hand the reverse may be true if the species is destined for structural application. The economic use of research resources will be assisted by the earliest identification of any outstanding property of a species together with any positive disadvantage that the species may have.

A single outstanding property together with the promise of reliable continuous supply can be seen to be held to justify the effort of learning to cope with any technical disadvantages. Further, it is doubtful whether any species available in large quantity need fail to find profitable use in solid form, with the possible exception of low density perishable species.

Attention has frequently been drawn in the past to the importance of reliable and continuous supply of species, but the need for technical research into the properties of species has generally been emphasised unduly by comparison with the need for research into the occurrence of the same species.

Research will be better directed if there is regard for the volume and distribution of occurrence of the species since this may indicate likely constraints on its utilisation. However, more importantly from a marketing point of view, this information is needed to establish and protect the availability of adequate supplies of a species to market outlets. This is necessary to maintain a balance with demand so that there is continuous rather than spasmodic supply, and so that continuity of demand is not lost through interruption of supply. Resource and marketing research are both necessary and any lack of information regarding inventory can only compound marketing problems.

Consideration of these two information requirements prompts the question "which is the more important problem regarding the commercially less accepted species, their occurrence or their technical properties?" Analysis shows that a random selection of commercially less accepted species will not appear technically very different from a random selection of established species except as regards the volume and distribution of occurrence. While it would be wrong to suggest that the study of individual species as regards technical and decorative properties would not favour the established species, it should also be appreciated that several highly priced established decorative species present some considerable problems regarding processing or use. They continue to command high prices because customer demand is paramount, but this will not persist unless there is reliability of supply to match the volume of demand.

2.5 POSSIBILITIES OF GROUPING

The low occurrence of a large number of species obviously suggests the possibility of grouping, something that has already been done effectively in several parts of the world including the tropics, for both utility and structural purposes. Only the truly decorative uses should be thought to be necessarily unsuitable for grouping. Colour gradation is practicable particularly if the concept of grouping is to permit and encourage specifiers and designers to allow the use of any one of several species for the whole of any particular job, rather than the mixing of species on one and the same job. For purely utilitarian and structural purposes it should be technically possible to mix species without limit from within a group though even in these cases it may facilitate the acceptance of grouping while still achieving considerable benefits, if mixing within a job is discouraged. Successful grouping will require careful selection of species from both the technical and commercial points of view. Appropriate technical properties need to be carefully established but the final selection of species to make up a group will need to take into account marketing as well as purely technical considerations.

Grouping for utility purposes is likely to be best achieved on the basis of decisions made in producing areas or regions rather than in accordance with international agreement on a global basis. Nevertheless, a global meeting supported by adequate research and development could well be the basis of guidelines for grouping for utility purposes, and adherence to the guidelines would help to harmonise the grouping criteria used in different regions without imposing unacceptably rigid rules. Global agreement regarding grouping for structural purposes is more likely to find favour, but even here there are varying considerations in consuming regions which must be satisfied if the grouping is to be commercially viable.

When numerous disparate species have to be grouped purely for structural purposes, the decision as to where to place group boundaries inevitably becomes arbitrary. The Australian system already has international repute and covers a great range of timbers and world regions, and its adoption or adaptation for world use should be considered. However, structural design in many countries is dominated by a few important temperate softwood species, and it is necessary to evolve a system of grouping that is very efficient for use with the most common softwoods, but that can also take account of the full range of other species including tropical hardwoods. For example, it would be quite unacceptable in Europe to introduce grouping rules which penalised the two species currently used in very large quantities for structural purposes on an individual species basis. Grouping there is perfectly feasible, but the current species must not be put at a disadvantage so as to increase building costs unnecessarily.

The timber trade places great importance on the correct use of nomenclature to distinguish species from species. The grouping of species will need to be based on this nomenclature, but this consideration should not inhibit effective grouping based on common properties and similarity of processing characteristics.

3 UTILISATION

3.1 CLASSIFICATION OF USES

The uses of logs from the forest may be classified as follows:

- 1) Sawlogs,
 - a) for local production of sawnwood, including railway sleepers
 - b) for export as sawlogs

- 2) Constructional veneer logs,
 - a) for local production of plywood, blockboard etc
 - b) for local production of constructional veneer for export
 - c) for export as veneer logs

- 3) Decorative veneer logs,
 - a) for local production of decorative veneer
 - i) to upgrade locally produced particleboard plywood etc.
 - ii) for export
 - b) for export as veneer logs

- 4) Logs for chipping or defibration for local production of
 - a) particleboard
 - b) fibre building board
 - c) medium density fibreboard
 - d) other wood-based panels
 - e) chips for pulping or for export

5) Other logs,

- a) for export as pulp logs
- b) for miscellaneous local round wood uses, such as poles, posts and constructional round wood.
- c) fuel for the efficient generation of power/heat
 - i) directly, as fuelwood
 - ii) indirectly, as industrial residues
 - iii) indirectly, as charcoal

Sawnwood, plywood, blockboard, and to a lesser extent, other panel products may be exported as well as used on the local market. In some cases, such as Brazilian Amazonia, markets may be threefold: local, national and export.

The extraction or manufacture of by-products may enhance the options available.

The residual possibilities are:

- 1) inefficient use as fuelwood
- 2) to be left in the forest to rot
- 3) to be left standing in the forest and thereby to have residual value from the forest management and ecological points of view.

3.2 LOG EXPORT

While some producing countries have very strict policies controlling the export of logs, others accept the initial export of logs to finance the costs of early industrial development. Others have permitted the export of logs of less saleable species while prohibiting the export of established species in log form. In strict financial terms log export is normally the most profitable activity of an integrated timber export industry complex, and is typically used to subsidize the activities that provide greater socio-economic benefits. It is worth distinguishing between the established species and the commercially less accepted species in determining the most appropriate strategy regarding log exports.

Importing countries that traditionally import a large proportion of sawn timber rather than logs and which have no significant plywood industry with raw material needs, still have a market for timber sawn locally from the round to satisfy the more specialised requirements

such as matched panelling. There is also evidence that new species can be introduced to a market more easily if there is local availability of logs of that species. This probably results from the ability of the supplier to match the potential customer's needs as closely as possible, whereas it is quite likely to be found more economic later to import sawn timber for the same end-use, thereby transferring the added value to the producing country.

Log exports are frequently destined to be peeled for plywood manufacture. Log producers, without access to veneer peeling facilities that can be used for trials of miscellaneous species will be at a distinct disadvantage in price negotiation with potential customers since the true peeling properties and compatibilities of species will only be known to the plywood manufacturer on the basis of his trials.

Durable species of small diameter may well find use as poles on export markets as well as at home.

3.3 PRIMARY PROCESSING

3.3.1 Sawnwood

The main factors of importance regarding the use of commercially less accepted species for the production of sawnwood are the possibilities of grouping and the problems of coping with higher density timbers. The question of grouping has already been discussed.

From the heterogeneous tropical forests, exploitation will typically have concentrated on species which were more numerous and accessible, easiest to work with and most suitable for profitable end-use requirements. Of the remaining commercially less acceptable species, many will be of higher density.

From felling onwards, higher density woods are clearly handicapped by their greater costs in handling and transport, and are therefore no longer as competitive for purposes not requiring greater hardness, strength and durability, which they may well possess. Besides, working with them is generally more difficult, requires more energy and may well be too much for equipment designed for use with less refractory species. They may also be disadvantaged in the two other main factors which make timber refractory, their physical and chemical composition. All these factors combine to have left the more refractory species in the forest in the past.

What is really important is the margin which exists between the cost of the material in its raw state and the value of the processed material, and finding solutions within this cost difference to pay for its handling and preparation. Highly prized decorative timbers like rosewood are able to bear some considerable cost and difficulty in this respect but with most species the scope is far more limited.

A timber species is thus perhaps only truly refractory, and perhaps commercially unacceptable, where the cost margin available for overcoming its difficulties is too small and where results are less satisfactory or predictable than those required.

An additional influence which can be seen with many well used timbers, is that as industrial and processing experience develops and people become more familiar with the problems of a particular species, so its refractoriness becomes less of a burden upon general acceptance and wider usage. Thus, newly introduced species are again disadvantaged until their characteristics and means of dealing with them are widely known. There are typically, means of overcoming most processing difficulties at a cost, unpredictable variability being perhaps the only true exclusion.

If the nature of more refractory timbers is considered it will, inter alia, be apparent that -

- higher density requires more wood tissue to be handled, cut and dried in relation to volume, ie more work per unit volume.
- complex physical composition eg interlocked grain, variable texture and high figuring will present more difficulty in preparation than a uniform mass represented by straight grain, even texture and lack of figuring.
- the less open and conductive the cell structure, the greater the problems are likely to be in terms of moisture transmission, ease and speed of drying, and impregnation with preservative chemicals.
- the more complex the physical composition, particularly in terms of additional presence of tannins, resins, gums, silicon etc then the greater will be the problems with tooling, finishing etc.

So, resolution of the difficulties in conversion may require -

- more massive and powerful equipment than would normally be associated with the particular log dimensions
- heavier gauge blades associated with these and a modified tooth geometry to produce a clean cut and overcome the additional load factor to the teeth themselves.
- more attention to blade cleaning
- a use, where appropriate of specially hardened or tipped blade teeth to overcome increased blunting effects.
- lower feed speeds

With regard to lower feed speeds, it should be borne in mind that an abrasive timber will have a less pronounced effect upon tooth wear if speed is maintained. Hence speed should be held to the highest level of strain which the tooth can reasonably stand in other respects.

Severe circumstances exist where a timber is dense and has a high resistance to cutting allied with a severe blunting effect. However, most timbers can be satisfactorily converted to lumber provided that equipment, tools and speeds are appropriate. The problem is not so much technological; it is more in terms of application and the point at which the operation is worthwhile.

Resolution of the difficulties in drying may require -

- careful selection of a drying schedule which reflects its behaviour and the temperatures and humidities which may be safely applied to it during the various stages of moisture loss.
- more careful monitoring of its behaviour, and schedule modification where it becomes apparent that standard conditions do not adequately cater for meet its behaviour during moisture loss.
- the evolvement of some more species specific schedules, based upon experience gained from such monitoring and modifications.
- a realistic assessment of permissible degrade, recognising the end-use requirements, and a tighter control to ensure that this is not exceeded.
- greater recourse to remedial treatments for degrade
- greater attention to stacking, loading and maybe end protection.
- longer drying times resulting from mild schedules, remedial and conditioning treatments.

Again the problem is more in terms of the point at which the operation is worthwhile, with the need being to find and apply solutions which will fit within an acceptable cost margin.

The above are directly applicable to sawmilling in the producing country but should also be taken into account where the producer is shipping logs to sawmills overseas since the same problems will be experienced there and may be responsible for an unnecessarily great reduction in price obtainable as compared with less dense species if the appropriate sawmilling techniques are not properly appreciated.

3.2.2 Veneer and plywood

Similar comments regarding possible processing problems need to be made regarding the use of species for veneer and plywood.

It may be apparent from appraisal of a tropical forest resource, the species contained, and market demands and economics that the most appropriate market area for exploitation may be for end-use in veneer and plywood production. Where this is so, then the emphasis in establishing and characterising technical properties and processing solutions will change. Whilst the data mentioned in the previous section may still be required for the proportion of the supply which may be found to be unsuitable for veneer production, more data relating to the logs themselves will be required. This will be in terms of distributions and uniformity of size, form, taper, growth and quality. Further data relating to processing will then be required in terms of log preparation, peelability and slicing, drying and gluing behaviour etc. Log data will need to be actively sought and collated, and specifically supplemented with processing data

obtained by ad hoc research and arranged trials. In view of the very specific technology and processes involved in veneer and plywood production, data from arranged commercial trials will invariably be necessary.

However in view of the high costs of these, sufficient log data to indicate appropriateness and to justify trials is therefore a most important aspect of promotion and end-use penetration.

Species that command a satisfactory price as sawn timber may also need to be used for face veneers to satisfy requirements of quality, colour and character, but plywood manufacturers should be capable of providing a use for larger quantities of other species, particularly since face veneers can be made quite thin. Log form and diameter are of course important.

Sliced veneer can be produced from most species but a very definite decorative character is needed to justify this form of processing and the marketing of decorative veneer of new species is likely to be both long and difficult, since the market is governed very much by familiarity and fashion, and there is strong competition from plastic and printed wood veneer.

3.3.3 Other primary processing

A wide variety of other panel products require the structure of the wood to be broken down. Wood chipboard, fibre building board and medium density fibreboard are the three main types, while wood cement board or blocks provide a rather different sort of product for constructional use. Wood cement products may be manufactured on either quite a small scale with low technology equipment or on a large-scale with considerable investment in sophisticated equipment to produce a high quality product. The others necessarily demand heavy investment in sophisticated processing that is difficult to carry out economically on a small scale. There can be species problems in all these processes, including wood cement, though medium density fibreboard would seem to be particularly species tolerant.

Chipboard and medium density fibreboard, as well as plywood, all make considerable demands on the availability of suitable adhesives and the need to import these may prejudice the viability of these options. The possibilities of producing adhesives locally should be explored, and there are several choices available regarding the import of raw materials combined with partial processing locally.

One significant benefit arising from the use of logs for products of this type is that the diameter and form of the log is comparatively unimportant by comparison with sawmilling and plywood manufacture.

Possibilities exist for the combined use of veneers and a variety of core materials, while waferboard and oriented structural board are further panel products which may yet appear as manufactures in tropical countries. Both the latter are potential substitutes for plywood, and are likely to have limited market prospects wherever economical constructional plywoods are available.

The manufacture of pulp from tropical hardwoods needs similarly high investment in sophisticated plant and is highly species dependent. While many tropical hardwood species have been shown to be suitable for pulp manufacture, their use is unlikely to make headway without the vertical integration of interests and long term trading arrangements. The same comment applies to the production of chips for shipping to pulp manufacturing plants in importing countries which is practised to a limited extent at present.

A variety of minor products from the forest are quite as likely to be satisfied by commercially less accepted species as by primary species.

The species tolerance of primary processes is very important in the context of the commercially less accepted species, and technical studies of possible improvements of processes in this respect should be encouraged.

3.4 SECONDARY PROCESSING

3.4.1 Of sawn timber

An effect of moisture content reduction will be improved strength properties which will influence subsequent cutting, for, as moisture content decreases below around 30 percent the required cutting force increases. The lower moisture content timber will now require higher power consumption and maybe stronger tools. All that has been said earlier regarding conversion will therefore apply but to a greater degree; the conditions requiring the harder and more sturdy tooling and increased feeding forces becoming rather more critical.

With cutting, we may summarise by saying that the influence of a more refractory timber by density will be to require stronger, less keen cutting edges to maintain life and to withstand cutting forces. With chemical composition, assuming an abrasive content, this will also require a less keen and/or harder edge. There will also be relative effects and influences on required feeding forces and power, upon cleanness of cut and upon feed speeds and surface quality.

Difficulties with surface quality are the main result of a disturbed, variable physical composition, although one could say that this made it more interesting and decorative. Resolution of this will be largely dependent upon varying the angle of presentation of tooling to the timber surface and its depth of cut. This will be to overcome defects ranging from a woolly, badly severed surface to a torn, rather than cleanly severed surface with the ideal cut being somewhere inbetween and requiring the best tooling compromise to achieve. Some appropriate combination of speed, depth of cut, cutting geometry and cutting materials can generally be applied to overcome or at least minimise the effects of more refractory timbers in cutting; and reasonable results may usually be obtained if the right action is taken.

It is by no means necessary to assume that those species currently considered commercially less accepted are all of a more refractory

nature. Though, as stated earlier, it is likely that the easier species and those of high occurrence will have received greater exploitation. It is also not necessary to assume that they will require the application of slower, more costly or even unknown preparation techniques, though again this may be true to some degree. The main inhibiting factor in preparation is likely to be that the most appropriate techniques are still to be identified and made familiar for the less well known species, to the extent that they may be applied confidently and predictably and within a cost margin, by industries who are becoming less able to rely upon continued use of established and better understood material.

3.4.2 Of other wood products

The secondary processing of wood-based panel products is largely a question of use of these materials in the construction, furniture and miscellaneous industries. The most appropriate comments regarding relevance of these uses to the promotion of greater use of commercially less accepted species are made in Section 6.3 and 6.4.

3.5 ENERGY AND FUELWOOD

The forest is an energy as well as a material resource. A large proportion of all wood harvested is used as fuelwood, though this is not likely to be so true of forests being systematically harvested for industrial wood. Nevertheless, a substantial proportion of wood that is felled is either left in the forest to rot or is removed for use as industrial fuelwood. Much of this material is quite unsuitable for sawmilling or plywood manufacture and can only be used for the production of heat or power. Where a complex contains plants which can accept smaller diameter, badly formed logs, then these same plants have typically very substantial energy needs and the satisfaction of these needs is a very important part of the material balance.

Regardless of species, approximately one half of the input to sawmills and plywood plants emerges as residues and the availability of this material restricts the need for logging residues from the forest, particularly since the transport of logging residues to the mill site can be more expensive than the unit transport cost of well sized logs.

It would be wrong to suggest that the use of commercially less accepted species for energy production will necessarily be a sound proposition, but the fullest study should be made of the energy balance of an enterprise, and the satisfaction of energy needs outside the industry to assist regional development might be considered.

The sawmiller without other integrated processing has little practicable use for his residues, let alone forest waste or defective logs.

4 INDUSTRIAL MARKETING

4.1 GENERAL

Some general considerations regarding the marketing of logs have already been described and the main marketing problems for the timber industry whether home or export based concern the marketing of sawn timber and wood-based panel products. Sawnwood presents marketing difficulties arising out of the diversity and variability of the material and Section 4.2 deals with these problems. Plywood, and to a greater extent particleboard, are partly man-made materials in which it is possible to match supply with demand in a way which is impossible with sawn timber. The spectrum of marketing considerations is narrower and there is no marketing consideration relevant to these products that will not be explored in the following discussion of the marketing of sawnwood on export markets.

4.2 SAWNWOOD ON EXPORT MARKETS

4.2.1 Current market situation

Tropical woods are not one commodity; they provide a range of materials, competitive with both softwood, temperate hardwoods and other materials. They provide materials of varied density which are used in every major wood-using industry, other than for high volume structural use in low-cost housing. They do not compete with the low and medium quality softwoods for roof and floor construction in this field. They do, however, compete with high quality softwoods, with temperate hardwoods, and with other materials in high class construction and joinery, in furniture and miscellaneous manufacture.

The pattern of the market in tropical woods is still very largely based on the availability of well established species which are either:

- 1) Species of high occurrence, of generally good form with properties broadly suitable for utility and decorative/utility applications

OR

- 2) species of lower occurrence, possibly with not such good form or with somewhat less accepted general properties, but possessing some highly desirable property such as decorative character or extreme durability.

The market for these well established species can be depicted as in Figure 1 in terms of use and price (excepting the cross hatched decorative band at the top of the left-hand side). Five use-classes are indicated, and the widths of the bands represent ranges of prices, increasing from left to right.

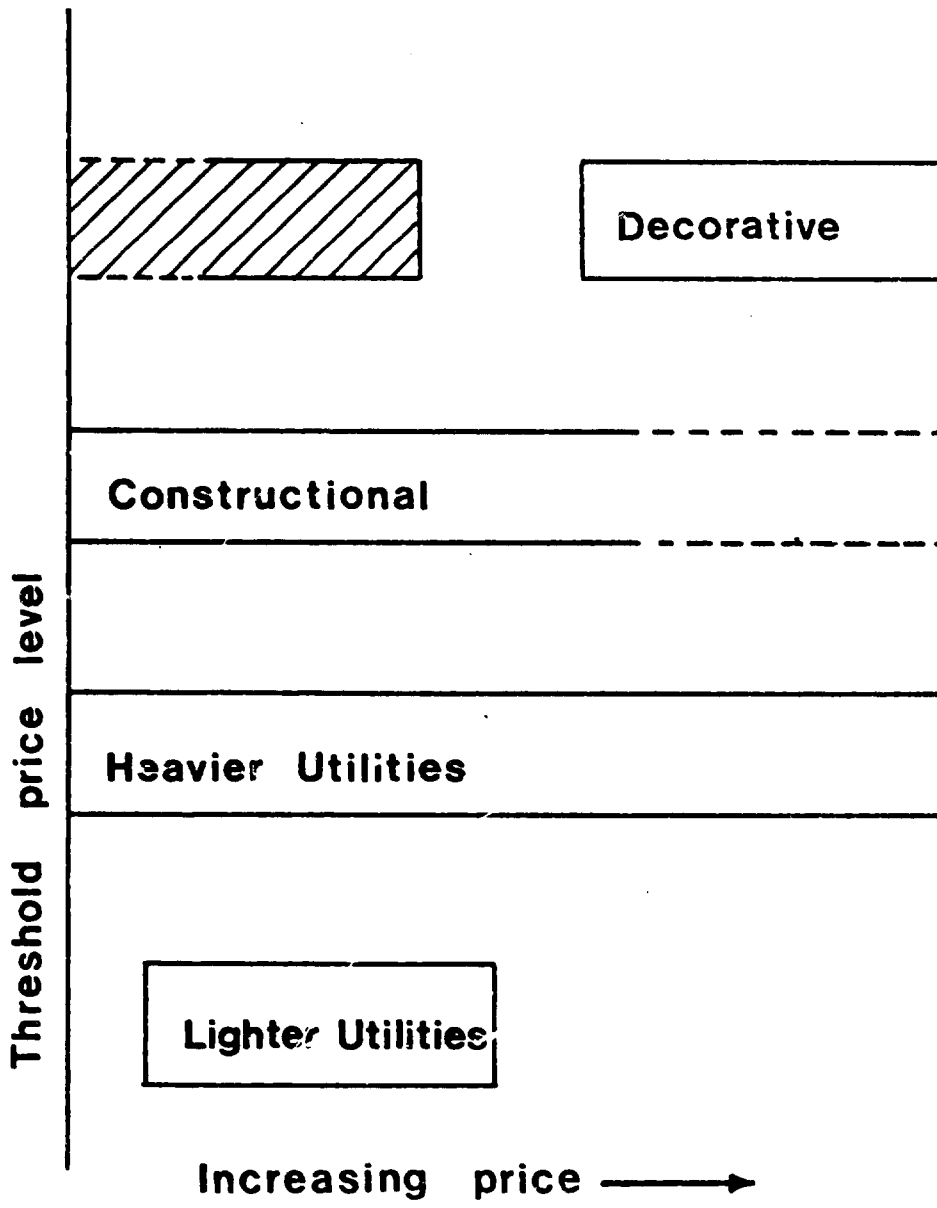


FIGURE 1

Specialities

The five use-classes are as follows:

- 1) Decorative species, having good colour and at least some significant character. Most species in this highly priced class have good utility properties though strong decorative properties may be accompanied by less good utility properties.
- 2) Constructional species, which will generally be of high density, and often too high for good utility properties. The higher priced species in this class are generally very strong and durable, being suitable, for example, for marine construction.
- 3) Heavier utility species, which are typically strong species suitable for furniture and joinery framing. Such decorative value as they have may influence their use and price.
- 4) Lighter utility species, which are used for miscellaneous purposes and typically have some decorative value, though more in terms of colour than character.
- 5) Speciality species having most unusual properties highly appropriate to certain uses.

Species of lower occurrence tend to feature at higher price levels within the decorative, constructional and speciality classes on the basis of their outstanding properties.

In the course of time a number of previously unused species were identified in established forest areas and have become well established in the market. Other areas have become the sources of species originally new to world markets but now well established. Some of these species certainly qualified in the past for the descriptions lesser known or lesser used, but their viability as commercial species makes them untypical of the commercially less accepted species which are today's problem. It must be rather doubtful whether there are now any species of high occurrence and good properties which remain to be recognised, though it is certainly possible that there are species of lower occurrence that will be found to be quite as marketable as several of today's higher-priced species on the basis of some outstanding properties.

The first requirement that can be established regarding the problem of the lesser-used or lesser-known species is to identify and evaluate those that need not be in anyway commercially less accepted. This is a matter of research into both occurrence and properties and will be referred to again later. Prospects for such species will be progressively improved by the reducing availability of currently used species.

The existing market is dominated by a small number of what might be called 'commercially essential' species, ie those which may be

expected to be found in most or all of the stockholdings of timber merchants handling tropical wood. In volume terms these species are dominant, but they are necessarily supplemented by a number of more specialised species which are leaders in their fields and which will be found in the stockholding of merchants specialising in those fields. In any particular market there will also be a number of other species for which there are established outlets and which survive the pressures of market cycles along with the commoner species. Further species are to be found on offer in a more hopeful or possible transient manner and may be looked upon as being commercially less accepted to the extent that they command prices which are perhaps lower than objective comparisons of their properties might suggest. The cross hatched band at the top of the left hand side of Figure 1 indicates the likely presence on the market of potentially decorative species commanding prices below the decorative price band.

Some of these less common species will be in the course of introduction to the market, and have still to achieve full market acceptance. To this extent they are temporarily commercially less accepted and this is a situation that may be made more difficult by restricted availability and high shipping costs

4.2.2 Introduction of new species

This section deals both with the sawn products of mills in producing countries and with further manufactures which may be produced from sawnwood in either the producing or importing countries. Whether the sawnwood is used very much in the form in which it leaves the sawmill (for example, in construction) or whether it is substantially further processed as in furniture or joinery, the marketing requirements regarding export and home use are similar in principle. It is a mistake to think that sawn timber for the home market need not be energetically marketed.

Sawn timber provides a wide spectrum of marketing possibilities since there are both many possible end-uses, and a typically competitive merchanting trade selling to buyers whose commitment to timber is subject to competition from other materials. Other markets to be considered later in this section have typically narrower marketing possibilities to fewer customers who are both committed to timber and expert in its use. The treatment of the market for sawn timber in this paper is therefore more substantial than for other products.

The marketing of a new species of sawn timber typically passes through several stages, in the first of which hand samples and information regarding the properties of the species are presented to the potential customer. The customer may receive larger samples for experiment and then perhaps small parcels at a discount price. Unfavourable comment is sometimes made when the customer comes face to face with the intended standard price, and it is recommended that a true indication of eventual price level should be given in the first place or that the basis of discounting the price of trial parcels is made clear.

A recent study carried out in the UK concerning the successes and failures in the introduction of new species to the UK market in recent years indicated that the best general approach was the insertion of a species into the stockholding of a merchant who is known to stock a wide range of species. The study identified a number of factors which were positive indicators of likely success or failure.

Indicators of likely success were suitability for a specific end-use, the familiarity of the merchant with the source of the species and his confidence in it, and a price advantage in conjunction with specific suitability.

Indicators of likely failure were reliance on price advantage solely, vague thinking that the species will fill a gap, and reliance on the concept of species substitution.

Merchants have three main criteria in judging the prospects for a new species and these rank more or less equally. The three are; occurrence and likely reliability of supply, the suitability of the species for specific end-uses, and ease of processing. Merchants are also concerned with the likely grading and specification of supplies.

Marketing problems are likely to be due to variability, light colour, low density, non-durability and any interlocking or uneven grain.

The amount and quality of information available regarding the species may well affect the possibility of introducing the species to a potential user but does not seem to have any significant effect on the outcome of that introduction, once made. The user himself will quickly become more expert in the utilisation of a particular species for his particular end-use than any research institute could achieve by providing information on properties.

The motivations of end-users in trying out new species are price advantage, suitability for end-use, some shortage of the species they normally use, and the resemblance of the species to some species in current use.

The typical objections of end-users to trying out new species are that their present supply is satisfactory, they cannot visualise the species being suitable, their customers will resist the introduction of new species, inadequate initial information, and past experience of unsatisfactory trials of unfamiliar species.

Most specialised end-users are unlikely to try a new species unless it has some outstanding property of significant relevance to their end-use. It should be appreciated that individual species get a reputation regarding their suitability for specific end-uses and for specific processing. Unsuccessful trials should be avoided by a correct choice of use and through the availability of data which will steer the user towards correct methods. Potential users are often interested in hearing details of use of the species in countries of origin, even though the use may be a craft rather than an industrial application.

This study 'The marketing of lesser known tropical hardwoods in the UK' was carried out by Mr Stavros Kalafatis, then a post-graduate student at the Thames Polytechnic in London, with the collaboration of a major UK timber importing company. The report is unpublished but was summarised in the Hardwoods Supplement of the Timber Trades Journal, August 1982.

This summary emphasized that the three main points of overall importance were found to be:

- i) price advantage of lesser known species over species with similar properties;
- ii) resemblance to established species; and
- iii) suitability for a specific job

Bearing in mind that price advantage on its own cannot overcome other major deficiencies of the timber, certain rules should be followed in order to formulate a successful pricing strategy. These rules are:

- 1 Target audiences more receptive to price inducements are people with managerial responsibilities.
- 2 Price inducements should be aimed mainly at customers who do not use tropical hardwoods as their main raw material.
- 3 There is no point in introducing lesser-known species unless a merchant can offer a really competitive price.
- 4 A "market penetration" approach should be employed during the initial stages of the introduction.

The findings of this study are obviously based on limited effort and may only be applicable to the UK. However, there can be little doubt that this study provides an insight into the processes of marketing new species which will be valuable to everyone interested in this subject.

The end-user's unit production costs will rise according to the number of different species that he has in use, since production control is simpler and less costly the fewer species being catered for. The cost of inventory also rises with the introduction of new species, and these are two reasons for caution on the part of the end-user in accepting or even trying a new species.

The effort that is necessary to introduce new species to potential users is quite costly for the importers or merchants involved, and this consideration reinforces the concern for the reliability of supply. Trading arrangements which provide for some exclusivity of supply to the importer or merchant concerned could be thought to be reward for his effort while also possibly being beneficial to the producer. Such arrangements would help cope with a small but potentially reliable volume of supply of an individual species.

Those interested in introducing new species of sawnwood to furniture industries in developed countries should appreciate that these industries are now geared to panel products and veneer which have substantially reduced the demand for sawnwood.

Possibilities of grouping have been discussed in a previous section, while the possible use of availability categories is discussed later. If the occurrence of a species is not high it should either be considered as a candidate for grouping or be aimed at some specific end-use for which it is particularly suitable. Such a species should not be marketed so as to emulate general purposes species when its availability cannot possibly support this role.

4.3 THE QUESTION OF QUALITY

4.3.1 General

A product which has been sold for any length of time will gain a reputation in the market place for its quality and the services which accompany it. This must affect its sales, but customers frequently will not tell the company that they do not, or will no longer, buy the product because of a certain reason; but they will probably tell their business acquaintances who may not buy it. In a timber context this could apply to the production of whole countries or individual companies, or to individual species of wood or types of panel product.

So, whether or not a company considers the quality of its products and services as well as their price and availability the company will be affected by its customers' reaction to that quality.

This question of quality should not be misunderstood. It is not a question of providing high quality in all circumstances. Rather it is a question of ensuring compliance with quality standards that have been set appropriately according to end use requirements. The standard or specification is the key to quality assurance. In the absence of national or customer standards it is in the interests of individual companies that they should correctly determine their own standards and control their quality in accordance with them.

Quality assurance is certainly most important in the context of export but it is also very relevant to home consumption in those countries where a large proportion of timber production is consumed in the producing country itself. There are several developing countries with substantial home demand where the use of timber and wood-based panel products in housing and other industries is prejudiced by low quality. Even where the activities of a country or individual enterprise, are predominantly export oriented it cannot be advisable to disregard the question of quality in the context of the home market. Quite apart from the likely growth of importance of that market, it is difficult to operate two different levels of quality in the same plant, and it is doubtful whether the practice of disregarding the quality of production for home use will often be correct.

In order to improve the situation there are four areas in particular where work could be carried out by a centralised organisation, either nationally or internationally. The areas are those dealing with quality appraisal, training, standardisation and quality certification.

Quality appraisal can be carried out in the context of an industry and subsequently in the context of individual enterprises within that industry. It should determine the existing status of the industry and its component enterprises as regards quality, should look at problems regarding raw materials and equipment that have an effect on quality, and finally should concern itself with the standards and quality requirements of the industries' customers. In the case of many developing countries there will be a need for substantial technology transfer regarding the whole question of quality if quality appraisal is to be carried out satisfactorily, particularly since the techniques of quality assurance are of comparatively recent development in industrialised countries.

Training is another obvious area for action, and any complete training programme should include technical requirements relevant to the product and production; general management techniques; and also reasons for achieving good quality together with ways of doing it.

Action could certainly be taken to assist producing countries in the carrying out of quality appraisal and the provision of training in quality matters. There are two subjects worthy of further comment; these are standardisation and quality certification.

4.3.2 Standardisation

If all the producers of a particular product within a country achieve standardisation it will have a number of advantages over individual producers setting their own standards. Some of the advantages are:-

- 1) The customer should be able to rely on all the products from any supplier within the country reaching a certain minimum standard. He will know what that standard is, can plan his buying and production accordingly, and can check the quality of deliveries if he so wishes. This will assist in making a good reputation for the country's product.
- 2) If the product is sold on the home market standardisation should allow subsequent manufacture to be carried out on a known product of consistent quality. This increases the ease with which the manufactured products themselves can be controlled as regards quality.
- 3) A common promotion campaign can be developed with confidence that all the products should be up to the standard - but this needs quality assurance, which is mentioned below.

In order to achieve standardisation research work is needed to determine the quality of goods currently being produced, the variations that may be produced in the future (eg new timber

species), and how they compare with the requirements of prospective customers.

These customers may already have their own specifications (eg National Standards) which are suitable for their own uses and products/timber species currently being used, but may be written to highlight particular aspects of existing products. This can be used as a basis for comparison but should not automatically become the country's standard for the new product/timber species since the characteristics of the country's own product must be the main criterion.

The method of approach to determining a standard is well known and requires tests on basic timber properties (eg density, elasticity, modulus of rupture, durability) for all the products or species likely to be sold in the country. One can go on to determine which of these properties are important for a particular end use, and to set a specification for that particular end use which can be emphasised to prospective customers.

A past example of standardisation that has taken place is sawn timber from Malaysia whose grading rules have become an accepted and respected standard.

An example of a problem area which could benefit from standardisation is the use of insecticides in plywood from the tropics. The details on the amount of insecticide to use, and how to use it, are now given by the preservative suppliers, who could be very conscientious or who could be influenced by sales prospects to provide ineffective advice. Also, companies may not have sufficient information regarding the process, or could be following one supplier's instructions with a different, and unsuitable, preservative from another supplier.

4.3.3 Quality certification

The last area which was mentioned earlier as being necessary to examine was that of quality certification. The two examples which have just been given for standardisation are also examples of where a good inspection scheme is in operation (West Malaysian Grading), and where an inspection or quality certification scheme might be very useful (the use of insecticides in tropical plywoods).

If any country goes to the trouble and expense of producing its own standard then they really need some means of ensuring that all producers keep to that standard, or they risk one bad company ruining a deserved reputation for quality.

However, no quality certification scheme should be set up hastily, without fully considering a number of points which include:-

1) Will the scheme be compulsory by Government legislation, or voluntary?

2) Will the scheme be completely operated by a Government organisation or a single authority, or will it allow a number of smaller groups to carry out the work, perhaps with a single overseeing organisation eg shippers inspecting their suppliers with a Government department checking the shippers?

3) The scheme could just be based on the inspection of products, or it could be based on the inspection of manufacturing processes, or a combination of both of these ideas.

4) Are similar schemes to the one proposed in operation in other countries, and is assistance available in devising a scheme together with details of practical difficulties of operation?

5) What sort of marking or certification should be used; and how can it be applied in a controlled manner.

6) How will the Scheme be policed, especially if the majority of the product is to be exported?

7) What publicity should be given to the Scheme?

Using the information gathered in the standardisation process it should be possible to determine how it would affect the existing producers, and how much of their output would be acceptable within the Scheme. The controlling organisation, or Government, must then decide what help can be given to improve the situation if necessary.

5 GENERIC PROMOTION

5.1 General considerations

Promotion is here seen as those marketing functions which facilitate the processes of exchange and physical distribution. It excludes the buying, selling, transportation and storage. While also excluding the conceptual processes of product planning, development, and pricing, there can be no doubt that promotion of the right kind will greatly assist these processes, either directly or through feedback. Direct aid is given for example by the encouragement of standardisation, while feedback is provided by marketing research and information services. Promotional activities as thus broadly defined can be categorised in two main groups:

- 1) Those that support the commercial aspects of exchange and distribution, such as the stabilisation and liberalisation of trade, the provision of marketing finance, the guaranteeing of export credits, or the agreement of standard terms of contract.
- 2) Those that concern the nature of the goods or services themselves, or the end uses to be satisfied, and are either more or less technical or are concerned with processes of persuasion and communication directed towards the specifier or user.

Both types of promotion are commonly carried out by trade associations and similar agencies. While in some cases both types are carried out within the same organisation, this is more normally not the case. One pertinent reason is the need to employ different types of staff. While the first and more commercially oriented activities are carried out by administrators, lawyers, and the like, the second and more technically oriented activities require to be staffed by scientists, technologists, economists, and professional marketing men.

While the first category of activities are undoubtedly promotional according to the broad definition, it is the second category that is more commonly referred to as promotion and it is with this category of activities that this paper is concerned. The use of the word technical in relation to some of these activities has to be interpreted broadly. It is particularly true of many species of wood that much of the appeal to consumers is qualitative and subjective and scarcely technical in a narrow sense of the word. These promotional activities range from the broad public relations approach at one extreme to research and development at the other.

Another vital aspect of promotion which can be broadly based is the market intelligence system, the feedback of data, analysis and opinion from the markets to the producers who can thus improve their planning and pricing policies. An organisation providing generic promotion would be producing considerably less benefit than it might if this activity were ignored. Such an organisation must inevitably

be exceptionally well placed to provide the further service with comparatively little extra effort.

Generic promotion has three main functions as regards the end user and specifier:

- 1) it must create awareness of the product
- 2) it must offer the maximum assistance to encourage its proper choice, specification and use
- 3) it must use persuasion to ensure that the assistance it offers is used.

5.2 PROMOTIONAL ACTIVITIES

Essential promotional activities include:

- 1) Marketing research
- 2) Publications
- 3) The provision of information on request
- 4) Exhibition, seminars and courses aimed at the education of the specifier and user
- 5) Development of end-uses appropriate to the market concerned
- 6) Representation of the interests of tropical wood on standardization committees
- 7) Advertising and obtaining editorial publicity

These activities are now considered in greater detail.

5.2.1 Marketing research

This activity is listed first because it is vital to promotion besides being a worthwhile activity in its own right. It is necessary to determine what promotion is required or what gaps in the existing effort need filling. The impact of the promotional activities on the specifier and user has to be monitored in order that the effectiveness of promotional activities can be improved.

Much can be achieved by desk research backed up by field work. The scanning of official reports and statistics, of the trade and technical press, and of the financial journals can produce much information which can be supplemented and followed up in appropriate depth by visits to trade associations and other organisations as well as to typical end users and specifiers. The reports that can be

produced will not only guide the promotional body in its own choice of activities but will also be of great value to producers' organisations.

In particular, market studies can be carried out. The size and structure of markets can be examined; the trends, problems and the motivating factors that determine the choice of materials can be established. An opinion can be formed as to the prospects for the species of sawnwood concerned and the competition that faces them. It may perhaps be said that this can all be done by feed-back through normal trade channels, but it is quite usual in all industries for sales intelligence to be supplemented by marketing intelligence separately acquired by specialists.

Most research projects are preceded by technical market surveys to establish their viability, and it should be appreciated that surveys carried out by a promotional body may be well placed to set a valuable research project in motion, particularly if finance has to be raised to support it.

While considering the benefits to be obtained from marketing research activities it should be remembered that neither the markets nor the producers' interests remain static. The trend towards processed products is common in forest industries and correct decision making is increasingly important.

A special aspect of this activity will be the determination of specific needs for publications felt by specifiers and users, in order that the most effective use can be made of budgets available for the next class of activity.

5.2.2 Publications

Publications may be either original or reproductions. Original publications may be prepared by promotional staff, but very often it will be necessary to sponsor work by independent experts or by other technically staffed organisations. It will often be found that suitable articles, papers, or other types of publications have already been prepared for similar purposes and will very often be readily made available for technical promotional purposes by the authors or organisations concerned.

Publications may perhaps be concerned with the properties of wood and wood products but publications of this type already exist in many languages and there will be little benefit to be obtained from duplicating the work of bodies such as CIPT or TRADA, or increasingly of bodies in the producing countries themselves.

Suitable publications are much more likely to be concerned with the end-uses of wood, particularly when interesting or innovative applications can be presented. Such publications should be relevant to the practices, tastes and requirements of the countries concerned, and special emphasis may need to be placed on the satisfaction of national regulations and codes of practice. This will usually require the collaboration of experts in the individual countries.

There may be a limited justification for publications of a descriptive type to enhance the prestige of wood, the organisations concerned with them, or the trading arrangements whereby wood reaches the consumer. There will often be some specific political or commercial objective requiring assistance for such publications to be worthwhile.

While some publications will cater for broad educational requirements there will also be a need for publications which will serve specific promotional needs while also serving the educational function. These will generally concern technical factors such as fire which tend to limit the usage of the material to a significant degree.

Technical publications must be used to ensure that specifiers see the problem in the right perspective and are aware of the options that are open to them. Some publications may need to cater for temporary needs on a timely basis.

The provision of information should include the making available of both hand and larger samples of species being promoted and possibly of small components or examples of joints.

5.2.3 Information

It is not enough to make written material available to those who take the trouble to request it. Contact must be made with specifiers and users in a positive way so that the maximum use is made of publications. It is true that advertising can help to achieve this, but not many users can be relied upon to collect information in advance of their needs. The important thing is for them to know where to enquire when they have a need and for the most appropriate information to be then available. The situation will vary from country to country, but in many cases there are well established existing organisations sympathetic to timber and anxious to see the fullest choice of suitable woods and wood-based panel products made available to user. The policy will need to be established but the alternatives are, on the one hand, collaboration with an established body that is likely to be interested in wood broadly, and on the other hand, the setting up of a new agency for sponsors concerned with all the cost and delay that will be involved before it is fully effective. The choice may be different from country to country. If a separate agency is established it may restrict its activity to the provision of off-the-shelf publications. To go beyond this requires the recruitment of professional staff who can offer advice as well as information. To do this is expensive, particularly since advisory services are best provided on a regional basis. Many enquirers will tend to get in touch with a local office of a broadly based organisation that will in any case put forward specific products as they are appropriate.

While the last paragraphs may tend to oppose the establishment of separate information agencies, where a central body exists, it is not suggested that these should never be set up for the particular benefit of certain sponsors. Apart from the provision of commercial intelligence and other services they can provide a postal address for replies to advertisements offering the availability of publications, and a base for staff collaborating with and backing up the activities

of other organisations. One aspect of information regarding which the greatest care will need to be exercised, is the provision of advice concerning the availability and price levels of sawnwood. There is a real danger of conflict with the established commercial channels of supply, largely because of the likelihood of the information provided lagging behind changing circumstances in the market place. The essential service that needs to be given to enquirers is the correct indication of what they may expect to get and how to go about finding it, whether it be goods or associated technical services. The architectural profession is generally well served by information services catering for the architect's needs on a broad basis. Standard catalogues are published to cover broad areas of supply. Specialised services maintain up-to-date information files in the offices of architectural practices. Journals provide frequent supplements bringing together the latest information on various subject areas. Promotional bodies need to consider their use of these services to promote their interests as regards the construction industry.

5.2.4 Education

A promotional organisation needs to have close contact with its public. The provision of written material alone will not create adequate prestige or presence for the organisation. Some personal contact will derive from the carrying out of the commercial intelligence function, but much more will be an essential part of the educational function that is an important activity of most promotional bodies dealing with professional specifiers.

Architects, engineers and designers have to be persuaded to accept the educational aspect of technical promotion. They are however prepared to welcome such services once they are convinced that they are offered responsibly and competently.

Nevertheless, much effort has to be expended to achieve entry. A wide variety of lecturing opportunities and prospects for holding seminars or courses are opened up once the collaboration of educational establishments and professional institutions is obtained. Collaboration with locally established organisations is likely to assist this process very considerably both as regards the negotiation of opportunities and the supply of competent lecturers and speakers.

5.2.5 Development

The development activities of promotional organisations are more likely to be concerned with end uses rather than product development. They are frequently actively involved in promoting improved and innovative usage of the material by carrying out or sponsoring development activities in appropriately equipped establishments or by collaborating with the end-user or specifier himself. These activities may be to generate general interest and publicity, but are often intended to prove some specific point or to achieve some specific objective such as the introduction of new species.

An example of market development was the tropical wood project carried out in EEC countries to develop an awareness of less well known African species among manufacturers of furniture, joinery, etc.

Another was a similar project in various countries on behalf of Papua New Guinea species.

Development is vitally linked with publicity since there is no better instrument for obtaining it. Since developments are often able to be seen or visited, a very special form of combined educational and publicity function can be built around a site visit or similar event.

5.2.6 Representation

There will be opportunities for a promotional body to promote and protect the interests of its woods in the drawing up of standards, codes of practice and regulations. This will not be easy until the body is well established since representation on committees is not easily obtained. At the very least, however, the agency can keep informed through its contacts with other bodies, and may well be able to encourage or sponsor the carrying out of design studies, experimental projects, or testing programmes calculated to provide the data necessary to satisfy the needs of committees which are generally disposed towards encouraging the use of materials for which objective data is available. In some cases, structural codes of practice for example, materials, can only be included if such data is available. Since wood and wood products are variable materials compared with most structural materials, the testing programmes to provide data are comparatively sizeable and expensive. A promotional organisation in a position to visualise the need can act to secure the sponsorship required. There is another way in which promotional organisations can act in a representative manner, and this is in conjunction with its sponsors and other interested parties. This is to provide the basis for some concerted marketing venture that would scarcely be possible if left to individual sponsors. The promotional body can weld the activities of the individuals together and superimpose an additional capability. An example is TRADAFARM, a group of TRADA members in the UK interested in the use of timber for the manufacture of farm buildings, who have made extensive use of tropical hardwood species.

5.2.7 Publicity

Publicity is presented here as the last activity but it is decidedly not the least. Every other activity can and should lead to it.

Publicity can be bought or earned; advertising or editorial.

Advertising is costly and its results difficult to monitor; nevertheless, most people believe in it in principle and can be persuaded to invest in it. The main problem is normally to decide the nature of the advertising that will give the best return.

Timber has in most of its end uses the characteristics partly of a consumer product and partly of an industrial product. The appearance qualities of the material have to appeal to both the designer and the buyer of the finished article while the designer is concerned also with its properties. Advertising intended to motivate the choice of the material on appearance grounds has to be high quality and correspondingly expensive. Addressed to the general public its impact will probably be small unless mounted on a sustained and

substantial basis. All advertising aimed at the professional specifier should seek to inform, and should offer the opportunity of further information by the provision on request of technical publications.

Editorial publicity can be achieved in ample measure but it must be merited; there is much goodwill in editorial circles for organisations that can provide interesting timely material or who engage in activities worth reporting. New publications, interesting case studies, educational happenings, and product or end use developments are all useful vehicles for publicity. Much of the justification for many activities lies in the publicity to be obtained.

Articles provided by the staff of an organisation or commissioned from other experts are generally welcomed by editors of appropriate journals if their subjects are well-judged to interest the journal's readership.

5.3 PROMOTIONAL GUIDELINES

Several guidelines may be mentioned regarding promotion:

- 1) Effective marketing operations must be carried on in the individual consumer countries, in the language of the country, in the context of local needs, and with a strong local flavour.
- 2) Such marketing can best be done on a collaborative basis with existing local organisations
- 3) Promotional bodies may differ from country to country, in some cases providing little more than a presence and in others being actively engaged in marketing operations chosen to suit the individual need
- 4) The most effective means should be adopted in each country to engage in the marketing activities discussed in this paper either by local operations or by the adaptation to local needs of promotional material made available from elsewhere.
- 5) Effective contributions can be made towards promotion by institutes or individuals who have been responsible for practical research into the properties of the species being promoted. A physical presence at seminars and exhibitions can be most helpful, while practical evidence of their work in the form of suitable exhibits providing a practical demonstration or indication of properties is likely to be appreciated.
- 6) This section has been written with export markets mainly in mind but home markets deserve and need similar promotion.

6 FOREST INDUSTRY STRATEGY

6.1 ECONOMIC OPTIMISATION

The purpose of a forest industry enterprise must be to maximise added value while having regard to the values attributed by government to the resource itself, to socio-economic benefits, and the weighting to be applied to foreign exchange costs and earnings or to import substitution made possible. The best criterion is probably added value per hectare harvested. Consideration should be given to the residual value of the forest, however difficult this may be.

Maximisation of added value requires choices to be made between alternative uses of the timber, and selling prices must be estimated for each option to be considered. Marketing research is therefore a necessary part of any feasibility or pre-feasibility study.

Both local and export markets for timber products should be taken into account, and the characteristics of each examined. Local markets can provide readier outlets for species that are commercially less accepted on export markets.

Governments may provide incentives for the use of less accepted species, and the effect of these on the economics of use should be taken into account.

Economic optimisation is often seen in terms of added value. This is a much abused term which tends to be interpreted differently by different groups of people. This is a source of some difficulty since it is undoubtedly a consideration of great importance.

One group of people interprets the word 'value' in its normal English language sense of intrinsic worth, as opposed to the meaning ascribed to it by economists and accountants, which is the difference between price obtained and the cost of external inputs. The first interpretation tends to be used to justify maximisation of employment in the producing country, while the second is the basis of a powerful tool for maximising economic and socio-economic benefit.

The first interpretation virtually equates added value with added cost of employment which of course can be of substantial benefit to a developing country. If the added price achieved per unit volume of log input is improved by as least as much as the cost of the additional inputs then all is well, but this is far from necessarily being true.

The correct use of the added value concept is no less powerful in the argument that it can produce for added employment but it gives greater warning of the possibility that in the final analysis the developing country will be setting off the added employment against a financial loss.

Those concerned with the strategy to be adopted by a country's forest industry should be encouraged to use this added value concept. It is convenient to consider the standing trees have no value since this is impossible to define, and since maximisation of added value will in any case ensure that the maximum value is extracted from the forest. On this basis added value equals FOB price achieved by sale of product less the cost of input materials, services and other expenses.

All three components of the above equation should be on an equivalent basis and cubic metres log input is such a basis. The price achieved per cbm log input will typically be about half the price achieved per cubic metre output of sawn timber or plywood and this must be watched very carefully.

The added value so obtained is equal to the cost of labour, the cost of depreciation of buildings, plant and equipment, and net profit. Breaking the added value down in this way facilitates an appreciation of the true situation as regards added employment, the cost of investment, and the strict financial profit without which any project may be untenable.

If it is desired to maximise added value in such a way that takes account of employment and the cost of imported materials and services then the added value may be credited with supplementary amounts equivalent to agreed percentages of employment provided and the cost of imports saved, and debited with a percentage of import costs incurred. In this way added value is a highly flexible concept which can strengthen arguments for added employment without losing sight of the possibilities of this particular employment becoming a financial burden to the country. At the same time the management of forest enterprises become subject to stricter financial control while still receiving credit for providing socio-economic benefits which do not, however, quite so easily become a justification for avoidable financial losses.

6.2 FORESTRY ASPECTS

It would certainly seem that the harvest per hectare from natural forests could be considerably increased in typical circumstances, probably by ten to forty percent, depending upon the homogeneity of the stands. However, higher extraction rates become progressively more detrimental to subsequent regrowth rates. The residual value of the forest must reduce as more timber is extracted, but the science of forest management is not exact enough to enable this to be quantified, though studies have been carried out which provide data likely to be valid for certain circumstances. On the other hand, the greater extraction of less accepted species may facilitate increased subsequent growth of the immature preferred species.

It has been said that the goal of forest management should be to integrate and harmonize the protective, productive and social roles of forest resources. Productivity is the most easy to measure but this must cover a whole range of forest products and services. The effect of the greater extraction of less accepted species on the whole of these integrated objectives must be very difficult to

assess. Nevertheless, forest departments should try to take into account the objectives of subsequent forest management when considering the problems of commercially less accepted species.

6.3 HOME USE OR EXPORT

One reason for the difficulty of marketing the lesser used species in importing countries is the length and complexity of the supply chain which is well served by the more trouble-free characteristics and general availability of the well established species. It has already been noted that the less favourable characteristics of generally available species can typically be coped with, but the handling of a larger number of species in small individual quantities is rather more difficult. Local markets are likely to be decidedly easier in this respect, particularly since there can be closer vertical integration between the primary forest industry and wood-based manufacturing industries. Individual smaller scale requirements can be satisfied more directly.

It is possible that local wood-based industries may be inefficient, poorly trained and equipped, and possibly incapable of coping with the more troublesome characteristics of some species. It is important that the training is provided to help improve any such situation and that equipment should be adaptable to cope with the use of such species. Equipment should be properly selected and maintained and provision must be made for the availability of spare parts. Saws and cutters need to be properly maintained and drying techniques correctly applied.

Action that might be taken includes the following:

- 1) To improve the knowledge of indigenous species suitable for constructional use on a practical architectural and engineering basis, including strength properties of full-scale structural components and the best practicable preservation methods.

This will require substantial laboratory work with suitable facilities and could go hand in hand with the provision of an opportunity for a number of engineers and architects to become expert in wood use. It will not be enough simply to redirect the effort of wood technologists or foresters who may currently provide the staffs of existing laboratories.

- 2) The codification of the constructional use of wood and wood-based panel products, and the dissemination of new technology to the construction industry professionals, the academic staff of appropriate universities etc; this should include the establishment of strength grading practices.
- 3) Training and education at all levels including self-build techniques among the rural populations
- 4) Demonstration projects in housing and other constructions and the promotion of the benefits of the new technology to national and local authorities at both political and executive levels.

- 5) Promotion also to construction industries that currently prefer to make use of other materials.
- 6) The removal of technical barriers to the use of wood as discussed above
- 7) The encouragement of a preferred investment as discussed in 6.4.

It is often recognised that it would be helpful to have a larger number of uses for wood and wood-based panel products in producing countries and that the larger volume uses that might be encouraged in the construction industry would be particularly helpful. Quite typically, there are consumer prejudices in producing countries against the use of wood in housing and there is need for promotion of the concept. Other constructional uses such as industrial buildings and bridges could also be encouraged.

Codes and Standards relating to housing and construction could well be examined to ensure that they do not tend to frustrate the use of a wider selection of species. At the same time, genuine problems such as resistance to termite attack and fire protection should receive full attention. One useful aspect of the use of wood in tropical climates is that the less dimensionally stable species are less troublesome in respect of movement than in temperate climates.

6.4 GOVERNMENT INCENTIVES

The Governments of producing countries should seriously consider the provision of incentives towards the greater use of commercially less accepted species. These incentives may be direct or indirect, and possibly the most important indirect incentive is Government encouragement and pressure on the local construction industry to make greater use of wood and wood-based panel products of local manufacture.

The more direct incentives might include the exclusion of the commercially less accepted species from log export bans, quotas or duties, and discrimination in favour of these species to reflect their lower value as standing timber. This discrimination could either be in terms of stumpage charges or export taxes.

Investment incentives might be provided for secondary industry which could make use of commercially less accepted species while at the same time encouragement should be given to the development of both domestic and export markets for the finished products of these industries.

Government incentives should be market oriented and based on appropriate marketing research. One problem might certainly be the definition of commercially less accepted species for this purpose. Occurrence will be the main guide, and it should not be difficult for a Government to produce a list of species classified as being commercially more accepted so that the less accepted classification can be applied to the large number of remaining species. The commercially more accepted species are likely to include a number of species of lower occurrence which nevertheless have outstanding properties and which command higher prices.

Where smaller companies are involved, the setting up of cooperative centres for the grouping of outputs might be considered and would probably need initial part-funding or incentives from government. Such centres might carry out various processes such as drying, grading, quality control, packaging etc. The commercial methods of operation of such centres will need careful consideration, particularly as regards export and contractual relationships.

7 ACTION PROGRAMME FOR THE COMMERCIALLY LESS ACCEPTED SPECIES

The need for an action programme to facilitate and encourage the better use of commercially less accepted species has been mentioned in Section 2.2. Parts at least of such a programme should be well suited to the objectives of UNIDO.

In the expectation that there will be discussion of the possibilities and priorities within such a programme and the practicability of achieving action-oriented solutions to problems, this paper finishes by presenting a list of possible areas for action at either the national or international level by governments, UN and other international organisations.

The possible work that might be included in such a programme is listed in order of mention earlier in this paper, and reference is made to the Sections of the paper in which they appear;

1) Two types of research should be encouraged regarding a) technical properties, with emphasis on outstanding features and main disadvantages; b) resource research emphasising the species composition of the forest with emphasis on those parts of the forest available for earlier harvesting.

Research into the properties of less accepted species should avoid duplication and should be firmly guided by realistic commercial requirements. (Section 2.4)

2) Global and expert group meetings might be held to provide guidelines for grouping and where found appropriate to encourage international standardization. Such meetings should be preceded by appropriate research and development (Section 2.5)

3) Technical studies might be supported into a number of problems including the processing of dense species, drying, peeling properties, small-scale processing and the local manufacture of adhesives (Section 3.3)

4) Further and continuing study of the species tolerance of products and processes could assist the utilisation of mixed species (Section 3.3)

5) There should be further study and development of the utilisation of low quality wood and wood residues for the production of energy and fuelwood. (Section 3.5)

6) There should be assistance in matters of quality assurance by technological transfer of appropriate practices and by special attention to product standardisation which deals adequately with quality control. (Section 4.3)

7) Further and up-to-date consideration could be given to the question of generic promotion of tropical wood and wood products, so that such promotional methods are available for use on species where proper application might remove their 'less accepted' classification (Section 5)

8) Economic case studies of the optimisation of the contribution from integrated forest industries should have particular relevance to the utilisation of less accepted species and the incentives that Governments might provide to their use (Section 6.1)

9) Considerable uncertainty remains regarding the effect of extraction rate on the re-growth of forests. The substantial attention that needs to be given to the study of forest management should include the need to appreciate better the effect of decisions that are taken regarding the extraction of less accepted species (Section 6.2)

10) Further assistance should be given to the problems of secondary wood using industries in producing countries and to the incentives that might be provided for them (Section 6.3)

11) There should be further consideration of the problems of using wood in housing and construction in producing countries, to help solve technological problems and to encourage the greater acceptance of wood housing by the peoples in these countries. (Section 6.3)

12) There should be realistic commercially oriented consideration of the establishment of cooperative centres for the grouping of the outputs of smaller producers, particularly for export. (Section 6.4)

