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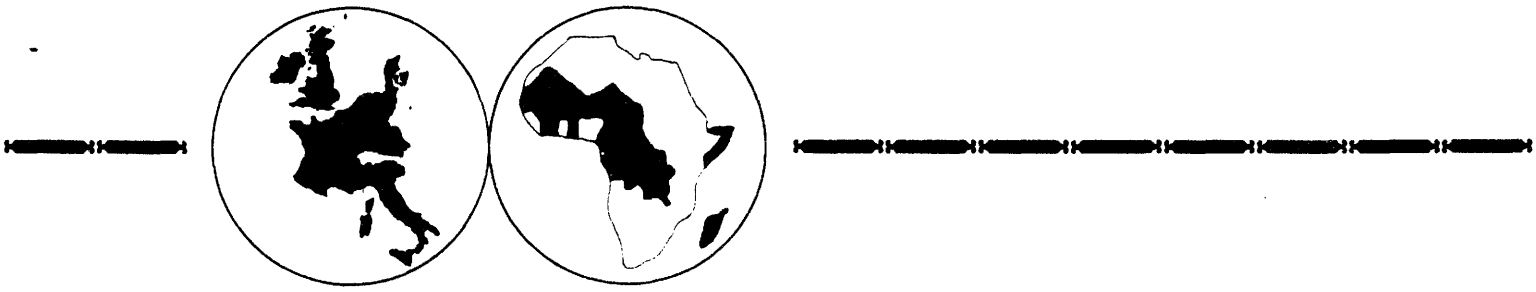
DIRECTORATE FOR TRADE AND DEVELOPMENT



POSSIBILITIES OF ESTABLISHING EXPORT INDUSTRIES IN THE ASSOCIATED AFRICAN AND MALAGASY STATES

PROCESSING OF WOOD AND MANUFACTURE OF ARTICLES OF WOOD

- ***FIRST STAGE OF PROCESSING:***
  sawing, peeling, rotary cutting, slicing
- ***SECOND STAGE OF PROCESSING:***
  profiles, mouldings, plywood, panels
- ***FINISHED PRODUCTS:***
  for building purposes and furniture

SUMMARY REPORT

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PREAMBLE

In view of the priority which the second Association Agreement (Yaoundé II) gave to the industrialization of the Associated African States and Madagascar and the opportunities that some of those States could be offered by the production of certain manufactures for export, the Commission of the European Communities, in agreement with the Associated States, has instituted a programme of studies on the possibility of setting up certain export industries in those countries.

These studies, carried out sector by sector, cover the following products or uniform groups of products :

- Livestock products
  - meat
  - hides and skins, leather
  - footwear
  - articles of leather
- Electrical and electronic equipment
  - electro-mechanical equipment
  - electronic equipment
- Processing of wood and manufacture of articles of wood
  - first stage of processing (sawing, peeling, slicing)
  - second stage of processing (profiles, mouldings, plywood, panels)
  - finished products (for building purposes and furniture)
- Iron and steel products
  - pelletization of iron ore and electric steel making
  - ferro-alloys (ferro-silicon, ferro-manganese, ferro-nickel)
- Preparation and or preserves of tropical fruits

  (dates, bananas, citrus fruits and essential oils, pineaples and preserves in syrup, cashew nuts, groundnuts for direct consumption and various exotic fruits)
- Manufacture of cigars and cigarillos.

The same method was used for all these studies. It involved analysing both the possible markets for AASM manufactures in the industrialized countries (the Community in particular) and the specific conditions of production for the product or products in the AASM States best placed to produce and export them.

All the studies were carried out by independent experts. The Commission defined the aims of the studies and kept a constant check on progress but, since the experts acted quite independently, what they reported reflects their own finding only and the conclusions to be drawn from them.

The study on wood products was supervised by Mr. André LAHAYE, the Directeur-General of Société de Recherche Opérationnelle et d'Economie Appliquée (SORCA).
The team consisted of

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with the collaboration of

Mr. Pierre ABEELS, Ingénieur des Eaux et Forêts, and Docteur en Sciences agronomiques,
Mr. Jacques COLLEAUX, Ingénieur des Eaux et Forêts, tropical agronomist.

The experts' reports (which are only available in French) and the final reports (which are available in German, English, Italian and Dutch) can be obtained free of charge from the following address :

Commission of the European Communities
VIII/B/1
200, rue de la Loi
1040 Bruxelles (Belgique)

THE WOOD INDUSTRIES

The study on the possibilities of developing export-oriented wood processing industries in the African and Malagasy States associated with the European Economic Community does not cover either the paper and paper pulp sector nor the chemical products extracted from wood, which in fact come under another order of reference from both the technical and economic angles.

On the other hand, all the products elaborated from rough, undressed timber have been taken into consideration and grouped in terms of the different stages of the industrial process, that is to say into :

- initial processing products (sawn timber, peelings, slicings)
- second processing products (sections and shapes, mouldings, plywood, panels)
- finished products (furniture, doorframes, floor panelling, various building elements).

The first phase of the study, devoted to the analysis of the markets, introduces a selection among these products in order to pinpoint those which could be manufactured in Africa with sufficient guarantees of export outlets and marketing.

The second phase analyses the general conditions of industrial production in those African countries having forestry resources. It than specifies the comparative advantages in terms of prime costs of enterprises set up in Africa in relation to those working in Europe with imported African logs. Finally, it examines the measures which must be undertaken to up-value the industrial potential of Africa in the wood sector and ensure satisfactory conditions of development for it.

A. GENERAL

Tropical woods are distinguished from the majority of the raw materials imported into the industrialized countries by very buoyant demand in the long term and by rising prices.

The prices of the products derived from these woods are not rising so sharply, but on the other hand more regularly.

These two facts seem to give an a priori advantage to the developing countries having forestry resources, and consequently to Africa.

However, as highlighted by the different analyses in the study, this advantage has hitherto not brought any exploitation consonant with Africa's potential. On the contrary, the position of Africa as a supplier of forest products has not ceased to worsen since 1960, whereas its most important reserves have hardly been eaten into.

To understand this situation and to work out constructive guidelines from it, it is impossible to divorce African problems from the corpus of world problems of the wood industry and its supplies.

The basic supply trends of the wood industries

The structure of international trade in the sector calls for an initial remark : unworked wood by far dominates overall exports from all the developing countries. Among the latter the African countries export the least industrial products in both relative and absolute terms.

In 1972-73, this general outline suddenly took on large proportions : after a period of depression in the wood market which extended from 1969 to the second half of 1972, the combined effect of an economic recovery and a rebuilding of stocks led, on the part of the major importers - Europe, Japan and the United States - to a sharp increase in demand and a parallel rise in prices.

In this context, African woods which were normally little favoured in export markets found outlets on the European market and because of this the offer of undressed timber was strengthened in relation to that of products processed in Africa.

However, above and beyond economic fluctuations and their immediate effects on relations between supply and demand, two basic facts seem likely to characterize, from now on, trade in forestry products at world level.

- a threat of raw materials supplies scarcity in face of growing demand from the major industrial markets ;
- the determination of the countries producing tropical raw materials gradually to restrict the export of logs and to substitute for it export of processed products.

The constraints of supply

The possibility of raw materials supplies scarcity flows from the relative reduction of forest resources in the Northern Hemisphere on which strong calls are made by the internal consumption of the producer countries, and which are limited by high operating costs and whose pace of regrowth is, moreover, slow. However, imports of tropical logs which have hitherto made it possible to balance out supply and the considerable requirements of the industrialized countries is coming up against ever-increasing difficulties.

The first of these difficulties flows from the material conditions of exploitation in the tropical and equatorial regions.

The great coastal and semi-coastal forests of Africa are near exhaustion, at least as regards the most commonly marketed woods. The up-country forests, and in particular the vast basin which extends from Zaire to the Southeast of Cameroon via the North of the Congo, the Central African Republic and the East of Gabon, are much less well known, difficult to make an inventory of, and badly served by transport infrastructures.

The major forestry countries of the Far East, in particular Indonesia and the Philippines, still have vast reserves which are accessible either by the coasts or by internal waterways. However, in order to satisfy an extremely large export flow to Japan, Korea and Taiwan, many forestry operators are applying skimming off methods which might well lead, in ten to fifteen years time, to the same exhaustion as in the coastal regions of Africa and to the need to exploit the forests in the interior under equally difficult conditions.

At world level, there remains the unknown factor of the Amazon Basin and its immense reserves, of which no inventory has ever been made. At the present time, nothing justifies the claim that operating possibilities will be better there than on other continents or that the nature of the forest will lend itself to good economic exploitation.

The second difficulty flows directly from the situation thus described. The more remote the forest clearing sites are, the more the despatch of the logs to the importing markets is slow and hazardous. Floating down the rivers is paralyzed in many cases in the dry season ; the railways have generally not been adapted to the increase in this heavy traffic ; breaking of load often leads to lengthy immobilization of stocks.
In this way, it can happen that production on the felling sites follows demand but that

the products delivered to the import market do not respond, either for the delivery dates desired or for the volumes and quantities requested, to the requirements of this demand.

A third difficulty flows from the reticence of many investors, who, having learned from experience of the problems thus met with, put off the time when they exploit the areas which are allocated to them in the up-country forests or hesitate to acquire any. This reticence is increased when there is uncertainty as to the future system of forestry operation, either because the producing States have expressed an intention to nationalize, or at least to control the exploitation of the forests, or because legal measures tend to regulate the conditions of felling and utilization of the logs.

All in all, the scarcity situation which is becoming apparent under the very strong economic strains of the market is less a matter of the rarity of the raw material than of the difficulties in obtaining access to it and exploiting it.

The substitution of processed products for logs in ther exports of the AASM

However, - and this is the second fundamental factor which seems likely to influence the future supply conditions for tropical woods - the producer countries, in their very great majority, are working in the direction of a policy of restricting exports of logs for which they wish to see substituted ever more processed products. This line of approach is adopted in all the African forestry countries, and the majority of the recent or present negotiations between investors and African States concerning the grant of forestry exploitation areas provide for the installation of processing units.

The trend of the structure of investments in Africa

This situation involves major consequences for the structure of the sector. Confronted with the operating difficulties mentioned above and the obligation to set up processing enterprises, only investors with considerable means are candidates for such schemes.

Whether it is a matter of Western undertakings, most of which have the advantage of long experience of Africa, or of undertakings from East Europe which are penetrating there for the first time, promotors are generally recruited among the groups which dominate the market in Europe. Some are vertically integrated and extend their European manufacture as far as the finished products - furniture in particular - but one meets more frequently companies which are horizontally integrated and produce sawn timber, peelings and products for panels.

The foreseeable consequences on marketing

The European Investments committed in Africa - but also, although in proportions hitherto much smaller, on other continents - could in the future ensure a privileged position to the integrated companies, which are better supplied with raw materials, and reduce the share today dominant of the marketing circuits with multiple intermediaries. Similarly, the concentration of the enterprises specializing in semi-finished products could result from the absorption or elimination in Europe of firms with low profitability rates which will not be able to survive the growth in raw materials prices. In any case, it must be expected that in the long term supply conditions will become more strict but also better structured, with the following consequences :

- better commercial organization, which in itself will be likely to reduce economic fluctuations ;
- a price formation machinery which will increasingly give the advantage to supply over demand, contrary to the way things work today.

The present position and foreseeable trend of demand

It should be stressed that the present situation is still very largely free of such influences. Greatly to the contrary, the market for tropical woods is characterised by its fragmentation and by the practically total application of the play of supply and demand in particular negotiations concerning prices. Anyone who regularly follows the movements of stocks and the trend of price quotations gets the initial impression of an extreme dispersion opposed to any overall view of the sector.

However, such an impression is deceptive. It is certain that the major industrial markets in fact follow a much more coherent evolution than appears at first sight and that this is based on two main tendencies :

- the first consists of diversifying and improving the nature and sources of supply. In this way, although woods which are little known or little appreciated find buyers in Europe when business is booming, this temporary situation is only intermittent in the course of a more general trend which is to demand only woods and derivaties of wood of high quality, failing which preference is given either to lots from other provenances or to substitution products.

- the second is based on growing differentiations between the two major categories of industries within the sector : one, which is very strictly dependent on its possibilities of supplies of raw timber, and which covers forestry operation activities, export of wood, and initial and second industrial processing, while the other groups the downstream industries : building, joinery, cabinet-making, and is a client of the "primary"industries.

It depends only partially on wood and also obtains its intermediary raw materials in the glass, metal and synthetic chemicals sectors. It is within these latter industries that wood comes into complete competition with other materials, and it is at their level that the possible fall back of the large markets on to cheaper products and surer supplies than tropical woods could, if necessary, occur.

Need for a new balance between supply and demand

On the whole, faced with supply of raw timber and products which is tending to become scarcer, better structured and more costly derived from wood, demand is putting forward increased requirements in terms of quality and growing diversification of its supplies which can go as far as a momentary or lasting fall back, partial or on a grand scale, on substitution materials.

However, it is hardly to be foreseen that a large-scale retreat of demand will occur in the near future. In the course of the coming decade it is probable that Europe will continue to be a large importer of woods from the tropical regions. But the stake in the coming years will nonetheless be decisive : if Africa and, in the wider perspective, the forestry countries of the Southern Hemisphere, respond to the requirements of the large industrial markets by regular exports of a satisfactory level in quantative and qualitative terms, it may be imagined that trade relations will develop on new bases favourable to the industrialization of the tropical producer countries. If, on the contrary, the offer of raw timber and processed woods does not succeed in following the requirements of demand, or does this only by fits and starts, we can and we must expect that the consumer industries will gradually turn away from tropical woods and leave them only such outlets as are not subject to mass utilization. However, the opening up of remote forests will only pay off on condition that there is a vast and sure market. In order that the vicious circle of a supply which discourages demand and a demand which does not stimulate the development of supply does not come about in Africa, positive measures to adjust both will need to be taken within the five to ten years ahead.

B. MARKET OPENINGS

The structure of Euro-African trade

Western Europe is by far the chief market for African products, whether these be rough timber or processed. The structure of European imports is characterized by a clear predominance of raw materials (85-90 %) and a very low proportion of sawn woods, plywoods and veneer wood (from 10-15 %). This structure is, however, not homogeneous throughout the continent and furthermore it is tending to evolve.

The current of imports of tropical timber into Western Europe is dominated by the purchases of France, the Federal German Republic and Italy. On the other hand, imports of processed products exceed purchases of unworked timber in the United Kingdom and account for 50 % in the Netherlands and Belgium. Thus, the European market presents sharp differences from country to country.

The positions adopted with respect to growing substitution of processed products for imports of rough timber are also different according to the countries. Great Britain and the Netherlands are much more open to this prospect than France, which however is less reticent than Italy. German importers are favourable to it on the whole, whereas the finished products industries, by contrast, are less so.

On the whole, the de facto or potential opening of the market to purchases of processed products makes itself felt mainly in those countries and professional circles which rely on a more commercial than industrial tradition. Profit margins on importation and business in processed products are, moreover, higher than those on unworked timber, and this difference increases as the products become more sophisticated.

The existence of an industry which has long been specialized in the working of wood has certainly been a ake on imports of industrial products. But, as shown above, we note at the present time a trend on the part of certain basic industries (peeling, slicing, plywoods) to develop upstream, to create industrial plants in Africa which are complementary to their European factories and, at the same time, to control the marketing circuits. On the other hand, the downstream industries rarely envisage the possibility of working with overseas firms and are more concerned, when it is a matter of more important enterprises, to control the marketing of their supplies or to participate therein.

In a general way, it would seem that processed products have improved their relative position in European imports over the last ten years, but this improvement is attributable to Asian rather than African products. Nonetheless, it is the expression of a gradual adaptation of demand to the structure of supply, when the latter reduces the share of raw materials and substitutes worked materials for them.

The selection of the products to be promoted in Africa

On these bases what are the products which, coming from enterprises set up in Africa, will have the best chances in the future of finding export markets ?

A comparative analysis of the market and supply conditions in African territory enables us to pinpoint four sets of criteria on which to base such a selection :

1. The outlets

The products must correspond to an expanding demand which is higher than the foreseeable production capacities (i.e. taking into account the likely elimination of non-profitable or marginal enterprises) in the industrialized countries.

2. Marketing

Enterprises set up in Africa must have the advantage of a well-structured marketing network, strongly established on the market and sufficiently ramified to protect the producer against any local market slump.

3. Standardization

Manufacture must extend to large series in the framework of long programmes coordinated between supply and demand.

4. Low vulnerability, in technical and cost terms, to transport

Finally, the products must achieve sufficiently high unit values and present technical resistance high enough to support the economic and physical burden of long journeys.

These four conditions may not be divorced from each other and must therefore all be present in order to ensure the viability of any export undertakings set up in Africa.

The selection criteria thus defined are reflected in practical terms in the following way :

a) Priority channelling of investments towards primary industries.

- the standardization of products, which is the corollary of all large series fabrication, generally declines when the degree of sophistication of the articles increases. Thus, simple sawing is subject to fewer specifications than shapings and the latter are incorporated into products which are standardized only to a very small degree on the European market, such as window and door frames and components of furniture.
- although the marketing of wood products is on the whole dispersed - particularly in the Western countries - there do exist sales channels which are more concentrated and better organized for initial and second processing products and for finished products.

. freedom of trade is curbed in Western Europe by the numerous national regulations which lay down the tolerances and standards to which the finished products must respond. Semi-finished products are not directly subject to such constraints.

. finally, it is difficult to transport without damage finished products or products which are very close to their final finish. Wood is a living material which reacts to damp and, in a general way, to atmospheric variations. However, the more elaborated the product, the narrower the utilization tolerances.

b) Exclusion of products with a low unit value

This exclusion concerns in particular particle panels and fibre panels. The latter have the advantage of incorporating wood and wood waste of all categories and thus achieving very competitive prices. As a counterpart to this, their low unit value makes the burden of inter-continental transport prohibitive. For the same reasons, it would seem to be out of the question that large series furniture manufactured in Africa could compete with furniture of the same category made in Europe from particle panels.

This criterion also excludes the primary products made from woods of little value and subject to transport over long distances. In this way, triplochiton - which is known as ayouz, samba or obeche according to the countries - although it lends itself easily to unrolling or ordinary quality sawing, ceases to be competitive once it has to cover long journeys in African territory before being exported. On the other hand, it can be used in the intermediary leaves of plywood.

All in all, in order to reduce the technical and the commercial risks of manufacture undertaken in Africa for external markets, these should concentrate on the following products :

- first and second processing sawing (shapings and mouldings)
- veneers, slicings, plywoods, dressed panels with the reservations attaching to the choice of the woods or the combinations of the constituent woods
- certain products which are finished but which are at a level of elaboration very close to the basic products of first and second processing can also be taken into consideration, although with more reservations : slats, flooring panels, decorative panels...

This selection is very limited in time, it corresponds to the possibilities of a period which is likely to extend over about 10 years. The market conditions might evolve appreciably in the long term, either in a direction more favourable to the installation of complete industrial chains in Africa or, on the contrary, in the direction of a strengthening of the downstream industries in the countries of the Northern Hemisphere and a growing orientation of their supplies towards other materials if the tropical woods should become lacking. However, and irrespective of the trend of international trade, the

development of primary industries in Africa may constitute the support for finished product industries which would supply the internal markets of that continent. In this way, it can be noted already that, despite a level of consumption which is fairly low on the whole, there exists in the large built-up areas in Africa a dynamic market for furniture and objects of daily use made of wood from which artisans and small national industries are the main beneficiaries. Here there are, potentially, new forces to be stimulated and organized, and this would be helped by a wider and less costly local offer of primary products.

The foreseeable volume of European demand

For the industries thus selected what are the foreseeable size and evolution of the market ?

Analysis of demand brings out the following facts and trends :

- The global volume of the demand for sawn tropical wood in Europe is, and will remain from now to 1980, higher than that of plywood and the like based on tropical woods. However, the plywood market is thought to be the most dynamic.

In this way, it has been estimated that :

- Net imports of sawn tropical wood would rise from 1.5 million m3 in 1970 to something between 2.5 and 3 million m3 in 1980
- Net imports of plywoods would rise from 0.8 million m3 in 1970 to a level between 1.6 and 2.1 million m3 in 1980
- Net imports of veneer leaf would rise from 0.14 million m3 in 1970 to 0.2 million m3 in 1980.

Products of African origin accounted for less than 35 % of total European imports of tropical sawn wood in 1970 and only 12 % of the imports of plywood. Their position in imports of veneer woods was better, but with respect to much lower volumes : 60 000 m3 or 42 % of total imports and 80 % of tropical imports.

Under the assumption that imports of African products would follow the pace of growth of the global imports into Europe they might evolve as follows :

- from around 500 000 m3 in 1970 to 1 million m3 of sawn wood in 1980
- from around 100 000 m3 in 1970 to 250 000 m3 of plywoods in 1980
- from around 60 000 m3 in 1970 to 120 000 m3 of veneer in 1980.

This is, in fact, a very moderate hypothesis.

The relative position of the African products coul improve if the following conditions were fulfilled :

- a better quality of sawn wood

  At present African sawn woods are criticized for not observing measures asked for by buyers, for often negligent finish, irregularity in supplies and a lack of homogenity in the lots. If all these defects were corrected, it is very probable that the European market would absorb much higher quantities of African sawn wood, since African woods are generally more appreciated than Asian. Better price conditions could also be obtained, for this criterion seems to be a less determining one than the demands for quality and regular supplies.

- a wider and more sustained supply of plywoods and veneers

  In this range of products quality is less criticized than the availability of supplies as African production is still very limited. However, the manufacture of products for panels in Africa corresponds to the future trend of demand, which is increasingly oriented towards hard plywood for external use.

The problem of outlets for second stage processing products whose manufacture is still extremely weak in Africa is more complex. This concerns in particular :

- sawn woods planed and treated
- shapes
- mouldings
- dressed panels.

Importers and utilizers tend to be very reticent towards these, where more simple products, like rough sawn woods, do not measure up sufficiently to the technical requirements of the European market.

However, potential demand is high. Whereas the rough tropical sawn woods, mainly used in building, are exposed to strong competition from other products (tempered woods and substitution materials), second processing sawn woods, which are used for internal joinery and the furniture industry, have an expanding market. It may therefore be considered that at the present time the constraints are much more on the supply than on the demand side.

In conclusion, the European market is potentially very open to high quality primary products. Technical manufacturing requirements and the need for regular supplies tend to prevail there over price conditions.

Other markets

1. Before terminating this chapter it should be recalled that about 90 % of demand comes from the countries of Western Europe. Eastern Europe has remained very inactive on the tropical wood market, with the exception of Yugoslavia and Rumania which have launched out on to a policy of investments in Africa both as regards forestry operations and wood processing. These two countries have a strong tradition in this sector and export finished products Western Europe. It is probably with the aim of supporting their own export activities with tropical woods that they are endeavouring to call upon African resources. It is still too early to judge how effective such a policy will be, but it comprises original aspects which it will be interesting to compare in the future with the orientations adopted by investors and importers in Western Europe.

2. On the whole, the United States market looks different from that of Europe. Quality requirements are less high on the average, but very great homogeneity is demanded of the products imported. Standardization of the downstream products is also more advanced. However, the American market has so far paid little attention to African products as the major part of its imports of tropical woods are from the Far East.

   This situation seems destined to change in a direction favourable to the diversification and widening of sources of supply for reasons of economic strategy and also for price reasons. On the other hand, and contrary to Europe, the United States import few unworked logs but give their preference to initial and secondary processing products. They thus offer interesting possibilities, hitherto poorly exploited, to exports by industries established in Africa.

3. It would have been interesting to analyse other potential markets, such as the Arab countries and South Africa. We have limited ourselves as an example, to examining an intermediary market between Central African and Europe, that is to say, North Africa. The three Maghreb countries are engaged on a policy of industrial development which will have stimulating effects on requirements for wood and products derived therefrom. However, they tend to meet these requirements as far as possible from their own resources thanks to reafforestation operations and a systematic effort to set up wood-processing industries. On the basis of the available information, it would seem that the market for panels, in the wide sense, is destined to close gradually against imports. On the other hand, the covering of internal consumption of sawn wood by national production is likely to remain insufficient and would leave the way for imports. The capacity of the North African markets is still limited, but they are evolving rapidly and may constitute interesting relays between producers in Central Africa and Europe.

C. SUPPLY POSSIBILITIES IN THE AASM

The analysis of supply covers the main producers of wood which are members of the AASM, i.e. :

- Ivory Coast
- Cameroon
- Gabon
- The Central African Republic
- Congo
- Zaïre
- Madagascar
- Togo
- Dahomy

which account for between 35 and 40 % of the production of unworked logs on the continent of Africa and more than 80 % of its exports.

Faced with a demand for tropical woods and products derived therefrom which is not only very large, but is called upon to increase rapidly and strongly in the short and medium term, what possibilities do these countries offer of stepping up production ?

Relative decline of the supply of forest products originating in Africa on world markets

A first consideration is inevitable concerning these and, beyond them, to Africa as a whole. African exports of unwrought logs, sawn wood, veneers and plywoods - i.e. the whole of the forest products at present proposed by this continent - has not ceased to decline in relative importance among world exports of tropical woods since 1960. Conversely, producers in the Far East have continually progressed on the export markets. In this way, in 1960, Africa accounted for 31 % of world exports of decidious timber. In 1968 (1) this proportion had fallen to 19 %, whereas exports of rough timber from the Far East rose over the same period from 51 to 69 %.

Exports of African sawn wood maintained their proportion of around 8 % of world exports between 1960 and 1968, but those from the Far East advanced from 18 to 22 %. Exports of veneer leaf from Africa have improved their position, rising from 8 to 14 % on world markets, but veneers from the Far East have advanced even more - from 21 to 29 % of world exports.

Finally, the Far East increased tenfold its exports of plywood between 1960 and 1968 and since the last date has been accounting for one third of world exports. In the course of the same period, Africa did not manage to double its exports and fell back in relative terms on the world markets which, in 1968, it was supplying only in a proportion of less than 3 %.

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(1) Last reference year of the 10 year series collated by the FAO.

All in all, the Far East consolidated its position as first world exporter of sawn tropical woods, first world exporter of plywoods and first world exporter of veneer leaf. The departments of FAO foresee that, towards 1985, exported production of sawn woods from the Far East could be three times that of Africa, and the production of panel products (veneers - plywoods) more than twice (1).

The situation which emerges from these trends is very clear : Africa's position on the world markets is a minority one, and this would not have any great significance if its Asian competitors were not strengthening their position on its only important market, that is to say, Europe. For Western Europe has become the leading buyer of sawn woods from the Far East and, for a little time now, an increasing penetration of sales of plywood from these regions has been noted there.

The competition which has thus become established is redoubtable for African producers. The structure of prime costs of the Asian products is better than that of the products of African origin, for they have the advantage of more favourable conditions of forestry operation (the forests are more homogeneous ; the density of the marketable varieties is much higher ; and the accessibility of the operational zones is still generally good). The processing industries generally have high capacities, if the semi-artisan sawmills in Malaysia are left out of account, and are highly integrated. Manpower achieves high productivity levels while wages remain low.

To trump such valuable cards, the African producers indeed have a few advantages of their own, to begin with the quality of their woods, which are generally held in higher esteem in Europe than Asian woods. It is certain also that, price and quality conditions being comparable, manu European importers and users prefer the African products to those of Asia because they know this continent better and have become established there on a larger scale, whether on the marketing or production plane. Furthermore, and as indicated above, Japan, Korea and Taiwan, which are purchasers of rough timber, and the United States which buys plywoods and veneers, exercise dominant pressure on the markets for forest products of Southeast Asia, and in periods of boom conditions can trigger off sudden price rises and a fall in the quality and regularity of supplies. Such periods turn a part of European demand away from Asian products and are therefore in principle favourable to the promotion of the African products. This was noted in particular during the economic recovery of the years 1972-73. However, the oscillations of European demand between African supply and Far East supply cannot in any case be regarded as a preferential and marked orientation towards the former, which remains and will remain, whatever happens, strongly subject to conditions of competition by quality and by prices.

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(1) This forecast, which is unoptimistic for African does not allow sufficiently for the substitution of processed products for rough timber or for the possibilities of increasing Africa's forest resources by opening up the more remote regions. But in any cas, we will keep in mind the very rapid growth between now and 1985 of exports of Asian products, whose relative position on the world markets will increase further.

The trend of prime costs of the industries supplied by African rough timber

We have therefore endeavoured to analyze the structure of cost prices of initial and second processing industries supplied by undressed timber from african forests.

The results obtained reveal the following facts :

- Foreseeable increase in the prime costs of the European industrial products

If we compare the cost prices of the sawn wood, shapes, veneers and plywoods manufactured in European plants from timber originating in the up-country forests of Africa, that is to say forests which stretch from 500 to 2,000 km. and more from the coasts, we note that these costs are higher by 7 to 16 % according to the products and the regions than those of the same products made from timber coming from the African coastal regions, which still account for the major part of the production of undressed timber. But in these coastal regions market varieties are becoming scarce and this inevitably leads to increasing calls on the forest reserves in the interior despite the difficulties of exploitation, and above all of access, which these generally present.

An increase in costs is therefore the logical consequence of the maintenance and development of Africa's wood production capacity.

Furthermore, the exploitation of the up-country forests leads in the majority of the countries to a certain number of indirect charges which arise from the following facts :

a) Immobilization of the lots either at the points of embarking or loading, or at points of break of load, or both, because of factors which may be :
   - natural : dry season for the waterways or wet season for the roads.
   - due to the lack of infrastructure : defective upkeep of the waterways, insufficient capacity of public timber-stacking lots, too low capacity of the rail axes.
   - under-equipment : inadequacy of transport and repair equipment, insufficiency and/or poor state of handling equipment.
   - problems of coordination between the bodies responsible for the various transport operations.

b) Damage to and even loss of part of the consignments provoked by accumulated delays and by stocking of a duration which can vary from a few weeks to several months.

In view of all this, and if we consider the total of direct and indirect costs borne by supplies from the forests in the interior, the prime cost of products processed in Europe is 10 to 20 % higher than that of products of the same nature but which incorporate timber from coastal regions with good infrastructures.

The growing recourse to the up-country reserves will therefore result in a considerable increase in the cost prices of the industries whose main sources of supply are in Africa. This situation may well cause difficulties for them so long as competing industries are supplied by timber which is cheaper, and this is the case at the present time for those using timber from Malaysia, the Philippines and Indonesia (1).

It may be foreseen that a levelling-out between production prices of tropical forests will tend to occur when the accessible forests of Southeast Asia have in their turn been exploited and it becomes necessary to open up areas which have no proper penetration axes. However, African production of undressed timber will have to bear a more rapid rise in its cost prices than Asian.

This doubtless explains why, despite the award of numerous permits to operate in the remote forests of Cameroon, Gabon, the Central African Republic, and despite the applications lodged with Congo for the exploitation of the forests in the North, and the interest shown by industrial groups in the great Basin of Zaïre, recent achievements remain small on the whole.

- Comparative structure of prime costs of the processing industries in Africa and Europe

Having noted this basic fact, we should determine how far it may extend or not to all the industries processing African timber. More precisely, is the foreseeable trend of cost prices as favourable to industries established in Africa as to those which utilize, in Europe, undressed timber imported from Africa ?

In order to reply to the question thus put, the analysis has endeavoured to compare the cost price delivered Europe of sawn woods, shapes, veneers and plywoods, according as they are manufactured :

- in Europe (localization in Belgium taken as the example)
- in the various coastal regions of Africa, and in particular in the ports
- in the cities or secondary centres where breaks of load occur between river and rail or road and rail
- in the remote regions close to felling centres.

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(1) Sales of undressed Asian timber on European markets are very small. We are therefore here dealing with timbers bought by Japan, Korea and Taiwan and those which are directly incorporated into exported products : sawn wood, veneers, plywoods.

The results thus obtained reveal the following facts :

First hypothesis : supplies originating from the coastal forests

- The cost price of the sawn woods produced in Africa in coastal plants and with rough timber from coastal forests is lower on the average by 11 to 33 % according to the countries than that of sawn wood manufactured in Europe from timbers of the same origin.

- According to the same criteria, the cost price of :

  . shapes is lower by 7 to 33 %
  . veneers is lower by 10 to 32 % (with the exception of Gabon)
  . plywoods is lower by 18 to 32 % (with the exception of Gabon).

  In these regions the burden of indirect costs is small (except when, as this may be noted at present in Duala, the port infrastructures and equipment do not permit normal handling of inter-continental traffic).

  It may therefore be stated that in a more general wayn and leaving aside the special case of Gabon, where the costs of industrial factors are very high in relation to the other African countries, the comparative advantage of the African factories in terms of cost price is a very distinct one.

Second hypothesis : supplies coming from forests in the interior

Does the same apply when factories established in Africa are supplied with undressed timber from the interior regions ?

The results obtained on this point are the following :

a) If we compare the cost price of products manufactured in Europe from undressed timber imported from the coastal regions of Africa on the one hand,

   and the cost pric (delivered European market) of equivalent products manufactured in Africa from timbers coming from the internal regions, on the other,

   it emerges that :

   the African cost prices are theoretically lower, with the following exceptions :

   - Gabon : sawn woods from factories in ports
     shapes from factories in ports
     veneers and plywoods, irrespective of localization

   - Cameroon : sawn woods from factories in ports
     shapes from factories in ports
     veneers, irrespective of localization
     plywoods from factories in ports

   - Congo : veneers from factories in ports
     plywoods from factories in ports.

The localizations outside of ports included in the analysis are either at points of break of load (rail-water, rail-road) or in the neighbourhood of the zones of operation.

However, if we incorporate into the cost price all the indirect charges which bear on undressed timber and the products originating in the regions of the interior, only the cost prices of Zaire and Ivory Coast remain definitely lower than those of equivalent products manufactured in Europe, because the direct and indirects costs of transport are lower there than elsewhere.

On the other hand, the advantage of an African factory working with rough timbers from the interior disappears in the following cases :

- Gabon : sawn woods irrespective of localization
  shapes irrespective of localization
- Cameroon : sawn woods irrespective of localization
  plywoods from factories situated at points of break of load
- Congo : sawn woods from plants near the felling areas
  veneers from factories situated at points of break of load.

In the aggregate, the following products seem likely to enjoy, despite possibly heavy indirect charges, prime costs which are lower than similar products manufactured in Europe from cheaper timber :

- Sawn timbers : Ivory Coast
  Zaire
  Remote regions of Congo and the Central African Republic
- Shapes : Ivory Coast
  Zaire
  Congo
  Interior regions of Cameroon and the Central African Republic
- Veneers : Ivory Coast
  Zaire
  Remote regions of Congo and the Central African Republic
- Plywoods : Ivory Coast
  Zaire
  Remote regions of the Central African Republic, Congo and Cameroon.

It thus appears that, by setting up plants in certain countries, and particularly in certain regions of Europe, it is possible to avoid the increase in cost prices which European undertakings will inevitably have to bear as and when their supply of undressed timber comes from forests distant from the coasts. Details of the prime costs obtained in different localities are set out in the study. But the synoptic summary

which we have just given makes it possible to affirm one essential thing : if the burden of indirect costs were reduced by adequate measures to improve and organize infrastructures and equipment for the evacuation of the products, the comparative advantages of the African undertakings would extend to a much greater number of regions and would be much higher.

b) Finally, we should compare :

- the cost price of the products manufactured in Europe with timber coming from forests difficult of access on the one hand, and
- the cost price (price delivered Europe) of similar products manufactured in Africa from timbers coming from these same forests.

This comparison makes it possible to form an idea in advance of the dominant features of the structure of the sector in Europe and in Africa when the majority of undressed timber supplies will come from remote regions.

The comparative advantage of the enterprises set up in Africa in relation to those working in Europe will increase appreciably. The cost price of the African products will be lower by :

- 7 to 29 % for sawn woods
- 3 to 38 % for shapes
- 4 to 38 % for veneers
- 3 to 29 % for plywoods.

Here again, the advantages of the African undertakings will be reduced by the burden of a whole body of indirect costs, but these will also be borne by the European enterprises importing undressed African timber. Thus, those regions which, despite sometimes very heavy transport and immobilization constraints, do not ensure a definite advantage in terms of cost price to firms setting up in them, will be very rare.

Summing up :

- the cost prices of industrial products processed from African woods are very generally lower in Africa than in Europe when the supply of undressed timber is identical in the two cases.
- in many cases, the products made in Africa from timber coming from remote forests and consequently dear, show cost prices which are lower than those of similar products manufactured in Europe from less costly timber.

This means in practical terms that :

- the industries can already reduce the growing charges due to supplies from little accessible areas by establishing processing plants in certain regions of Africa.

When differences between the conditions of exploitation of tropical forests throughout the world have been ironed out - that is to say when the production of undressed timber will mainly be from remote forests, difficult of access and penetration - there will be a definite advantage in establishing initial and second transformation factories in Africa rather than in Europe.

But il will only be possible to exploit this advantage if the demand for tropical wood is not meanwhile switched towards other materials. We have seen above that this possibility cannot be brushed aside : consumption of tropical woods is in danger of being discouraged by over-irregular supplies and by prices which are increasing too sharply and too fast. It is therefore important, and even essential, that a systematic effort be made to render easier, less costly and less hazardous the opening up of the forests in the interior Africa.

- Adaptation and development measures necessary to improve supply

Such an effort should include the following measures :

- On the part of the States :

  . the development of regional transport media and, simultaneously, improvement of the upkeep of equipment

  . priority for the reorganization of the main arteries of penetration by river, rail and road

  . the simplification of administrative formalities and taxation concerning equally forestry operations and industrialization, transport and exportation

  . the adjustment of tax policies with a view to promoting processing of undressed timbers on the spot rather than their export in the rough state

  . a clear definition of the objectives of the forestry policy of the country concerned and the commitment on this basis of coherent aids to investment, national or foreign, public or private

  . the effective guarantee of commitments entered into with respect to investors.

- On the part of industrialists :

  . effective cooperation in the forestry policy of the African countries, particularly in the fields of :
    - forest inventories
    - the reorganization of infrastructures
    - safeguarding and regeneration of forests
    - occupational training of supervisory staff and labour.

. the creation of well-equipped and well-managed industries capable of standing up, on the technical and economic planes, to the competition of products manufactured in Europe, the United States and the Far East.

- On the part of the international development aid bodies :

  . priority aid to transport infrastructures in accordance with criteria which allow for both their direct and their indirect profitability

  . parallel aid to occupational training particularly for middle-grade supervisory staff and operatives.

In order to clarify these various recommendations, certain measures should be specified forthwith. These concern at the same time the public authorities, private initiative and international developments aids. They are :

- the reorganization and improvement of the main penetration arteries of the continents: their direct and indirect effects on development
- the creation of new industrial structures
- the improvement of structures for the reception of new initiatives and the promotion of investments.

The reorganization and improvement of the main penetration arteries

The opening up of the internal forests of Africa is basically linked to the reorganization and improvement of the main penetration arteries, whether this concerns the development of the existing infrastructures or their extension or, more generally, both. Of all the African forestry States associated with the EEC, Ivory Coast is the one which has the transport network best adapted to its requirements. It is true that the distance to be covered are not as long as in Central Africa, but it is remarkable to note that, despite the direct cost expressed in tons or in m3/km which are higher as transport is by trucking, the real burden of transport in the prime cost of the products is much lighter than elsewhere thanks to the easy flow of the traffic and the absence - or at least the negligible duration of the intermediary periods of immobilization (1).
This example is worth stressing, for it shows that the profitability of transport towards the internal regions of Africa is quite a relative concept. It must be assessed not only in terms of the direct effects of its utilization (based on comparison of the cost and receipts) but of the disadvantages which it makes it possible to eliminate or avoid.

(1) The burden of transport in the cost price is also low in Zaire in relation to what has to be carried in most African countries, and this because of particularly low transport tariffs on the internal routes. But a certain time-lag is foreseen between the gradual increase in the production of the Basin and the adaptation of infrastructure, particularly in the port of Kinshasha. The burden of indirect costs could therefore weigh on the take-off of this zone of operation, as in the case of the Sangha region.

However, we have just seen that these disadvantages have as their consequence at the present time :

- that they place generally very heavy indirect burdens on most of the products
- that they discourage the opening up of the internal forests or in any case limit it to the exploitation of a few verieties whose marketing can be ensured on a wide scale.

A third order of negative consequences, which is less sensitive in the private sector, but essential with respect to Africa's development needs, may be expressed as follows :

- the absence of good penetration infrastructures confines economic development to a very small number of areas, most of which are concentrated along the coasts.

In this way, although the cost prices of the products of initial and second processing derived from wood are theoretically lower when the manufacture is in plants close to the timber-yards, plants located in port areas enjoy a whole number of external economies which have no equivalent in the remote regions. In the latter, industrial investments must be accompanied by the creation, ex nihilo, of living accommodation, of a system of supply for the undertaking in the strict sense and its personnel, and a veritable social infrastructure (school, dispensary, etc.). Furthermore, whatever happens, certain requirements remain unsatisfied. These include contacts with complementary industries and services and disposal of non-exportable production on the local market. This explains why the majority of African industries have set up in or near sizeable built-up areas, whereas, paradoxically, these establishments are generally the least competitive with European undertakings working with imported rough African timber. This de facto situation engenders a blocking of development. In order to reverse such a process it would be necessary to promote investments in the up-country regions, but this presupposes that the African States include the major access facilities to the forestry reserves in more generous programmes for the organization and exploitation of their back country.

In practical terms, this would imply the following measures :

- coordination of forestry infrastructures in the strict sens with national road, rail and inland waterway transport networks.
- adapting the itinerary of road and rail penetration networks to serve inhabited areas and areas possessing natural resources other than wood (1).

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(1) It is noted generally that the opening-up of penetration routes attracts population and that these people destroy entire forest areas in order to turn them into agricultural land. The human settlements thus created move on as the soil becomes impoverished and burn forests somewhere else. It would therefore seem indispensable, when providing access infrastructures to forestry regions, to delimit the areas reserved for agriculture. The land should be enriched with fertilizers so as to avoid or at least gradually reduce recourse to itinerant and devastating burning of forests.

- dovetailing with these objectives private programmes of forestry infrastructures.
- calling forth, thanks to these new communication media, the development of multi-production, secondary centres in the regions of the interior. In the forest areas strictly so-called, the centres of the wood industry should be paired with other agricultural, industrail and tertiary activities.
- rendering profitable in this way the major penetration infrastructures serving the most diversified range of resources possible.
- supporting, in connection with the opening-up of the forests in the interior, the spread of development throughout the whole of the national territory in question.

This outline of principle should be elaborated on within each country and for each region in the light of their particular characteristics and development opportunities. Failing such programmes, there is little hope that the felling centres, even if they were to be extended by sawing, veneering and plywood plants in the internal regions of Africa, would exercise multiplying effects on the general economy of these countries. Moreover, there would be a great temptation for the States to offset the growing charges of improving and maintaining the internal infrastructures by extra taxation which would not be calculated to stimulate new investments.

The creation of new industrial structures

Whether it be on the initiative of investors, or more generally, on the initiative and in accordance with the will of the African States, the allocations of forestry operation areas are and will from now on be linked to the obligation to process a portion of the production of undressed timber before exporting it.

Industrail development will therefore be linked in the future to the opening up of the forests and their exploitation although it is also possible to foresee the emergence of undertakings independent of forestry operations.

But in the one case as in the order, the structure, capacity, organization and production programmes of the exporting industries will depend :

- on the quality, nature and cost of the supplies of rough timber,
- on the technical and commercial possibilities of finding outlets for their production,
- to a lesser, but nevertheless important, extent on the existence of a local market susceptible of absorbing the non-exportable portion of their production.

The advantages and the constraints proper to these three orders of factors differ appreciably not only from one country to another but between the regions of each country. It is therefore not possible to generalize in defining the types of wood industries which should be developed in Africa from now on. The study therefore concentrates on

the contrary on specifying the industrialization hypotheses which respond best to the specific nature of the principal forest zones of the continent, laying the stress on the extremely contingent nature of the criteria chosen.

However, a few basic comments must be made concerning these :

1) New industrialization cannot and must not be conceived of as a mere extension of past industrialization. Hitherto, the latter has constituted a prolongation of forestry production of which it generally absorbed the rough timbers of less good quality. From now on, processing industry installed in Africa qill increasingly, and in the nature of things, use timber of good conformation. Such industry will only be able, in its response to sustained but very requiring demand, to market well-worked and precise products which conform to the dimensions and tolerances laid down by the users. It must therefore be considered that even if it fits into the framework of the extension of existing enterprises, the African industry will have to undergo a change which will mean progressing from the stage of elementary processing of the wood to that of a production which is technologically comparable to what is achieved by the best European, American, or Japanese firms.

2) This very fact will mean that the structure of the African enterprises will become more complex. Even if simpler equipment is adopted than in the industrialized countries, these enterprises will have to offer similar guarantees of precision and homogeneity of their production. Treatment by drying and tempering will be the necessary accompaniment of the more sophisticated products, and, in a general way, of those which will have to stand up to long and difficult transport. Conditioned storage workshops and hermetical packagings will also have to be provided for all products in danger of deteriorating with time. Such putting-up and preventive treatment will be particularly necessary for such time as inter-regional and maritime transport facilities have not been adapted to more elaborated and more vulnerable industrial products.

3) It would seem irrational in future to limit the basic industries to a single type of product : sawn wood, veneer or plywood, as has generally been the case hitherto. In order to extract full value from forests as heterogeneous as the great majority of the African ones, it is necessary to be able to utilize simultaneously sawable varieties, cutable varieties and peelable varieties, and among these the noble varieties, for external veneers and the less valuable for internal leaf. Finally, the "secondary" varieties - in other words those whose degree of dispersion and heterogeneity is too high for them to be used in large industrial series production - would be suitable, after prior tests and selection, for the manufacture of small volume shapes. In brief, it may be recommended to owners of forestry exploitations to open different processing departments and thus make it possible to utilize for

the best Africa's resources of wood. Such a recommendation does not, however, mean that it is always profitable to set up vast industrial complexes with multiple departments. On the contrary, the greatest caution is called for in the choice of the capacities and sites of the different workshops of one and the same enterprise, and it will ferquently be possible to envisage decentralization of the plants between the forestry felling points, the factories situated at breaks of load and those established in port areas. Working case by case, a balance will thus have to be found between the capacity of the forest exploitations to produce undressed timber, the climatic and technical constraints of transport, the costs of industrial factors in urban centres and, the external economies of the port areas.

4) All these considerations taken together point to the installation in Africa of industrial groups powerful enough to ensure, upstream, the costs of exploiting distant forests and, downstream, the commercial links with the leading world markets. It would be unrealistic to advocate, or simply to believe, that the development of these basic industries can be undertaken by firms without a strong financial, technical and commercial capacity.

5) Such a realisation of the existing facts, however, runs up against certain limits. It does not concern either firms which work essentially for the local market or firms which are independent but ancilliary to the exporting industries.

The first of these categories includes :
- local sawmills, manufacturers and artisans in the furniture-making industry
- the building industries
- manufacturers and artisans of every-day and decorative objects made of wood.

The second category includes :
- independent sawmills working for the local market and export (1)
- possibly, producers of shapes and mouldings, on condition that their supply of sawn woods is ensured and that they have the benefit of a good marketing network.

For such firms to be viable it is essential that they should have supplies of undressed wood and basic products in sufficient quantities and at reasonable prices. In this respect, they are and will remain largely dependent on the big forestry producers.

However, it is in the interest of all the African countries to promote, side by side with the exporting firms, an intermediary sector of average and even small enterprises. These will develop industrial initiatives and creative spirit. By supplementing

(1) It may be a question in particular of specialized industries producing stays, boxes and other simple products for a small number of clients. However, their competitiveness is ill-assured if they do not have their own felling activities.

the range of wood-derived products up to the stages of final consuption they will ensure, in the immediate future, a more complete utilization of the available raw materials and, in the longer term, they will prepare Africa to get beyond the stage of primary industries and launch into complete industrial processes. Finally, by extending and diversifying supply on the internal markets, the medium-sized firms will help :

- to increase possibilities of employment (whereas the big basic industries create few jobs in relation to production) ;
- to develop competition and thus preclude excessive prices on the internal markets ;
- to stimulate internal consuption of wood-derived products, which itself will generate a more sustained expansion of demand in Africa.

Improving the structures of reception and promotion of investments

The development of investments in the exploitation and processing of wood in most of the African countries runs up against constraints of a physical nature which are aggravated by inadequate infrastructures and equipment. Irrespective of the range of the problems which this raises, it may be considered that the combined effort of the public authorities, the private sector and the international development aid bodies would be able to make it possible to overcome these gradually in the course of the ten years ahead. But this task, which responds to the interests of the States, the firms, and the population involved, tuns into an obstacle which it is difficult to measure but which is strongly felt by the majority of those endeavouring to implement industrial projects in Africa. This obstacle is of a political and administrative nature and, furthermore, fits into social contexts which are not always favourable to the development of economic activities.

On the political plane : most of the countries considered have adopted investment codes which grant numerous advantages to industrial promotors. The implementation of these codes is sometimes frustrated by a reception which is not consonant with the intentions expressed. Furthermore, there is much uncertainty among the candidates for new investments, as among industrialists long established, concerning the future status of forestry operations, private enterprise, relations between foreign investors and national authorities, and repatriation of capital.

At administrative level : the introduction of dossiers concerning the application of the code of investments, the applications for authorizations, lodged with the powers competent for the opening of areas of operation, for the setting up of industries, the formalities for importation, equipment, immigration of cadres, etc.., involve procedures which are generally very long and sometimes very confusing.

The same is true regarding the application of the fiscal systems whose complexity may finally lead to failure to recover at least part of the taxes and impositions. Such situations are harmful for the States, which, because of them, do not have available means of action consonant with their objectives, and to firms whose decisions and projects are delayed or paralyzed.

On the social plane : relations between manpower and trade unions on the one hand, and foreign cadres on the other, are difficult in many cities of some importance. The problems posed are not the same from one undertaking to another nor from one country to another, but the application of arbitration procedures has generally not sufficiently come into practice nor sometimes into law as regards industrial disputes. All these difficulties are not peculiar to the African States. In differing degree they are typical of most of the countries which have to call on external investment to develop their industrial potential.

But the fact of noting this circumstance in no way rules out the need to remedy it. The study shows clearly that Africa offers high comparative advantages to processing industries based on products derived from wood despite the present difficulties of access to forest reserves. It would be a grave error to jeopardize such exploitation by the lack of reception, encouragement and effective aid to those who will bear the relevant risks. The future of the African forests will be decided very probably in the next ten or fifteen years. Beyond this time other producers and other materials will perhaps have taken the place which Africa, by means of a dynamic industrialization policy has the possibility of occupying solidly.