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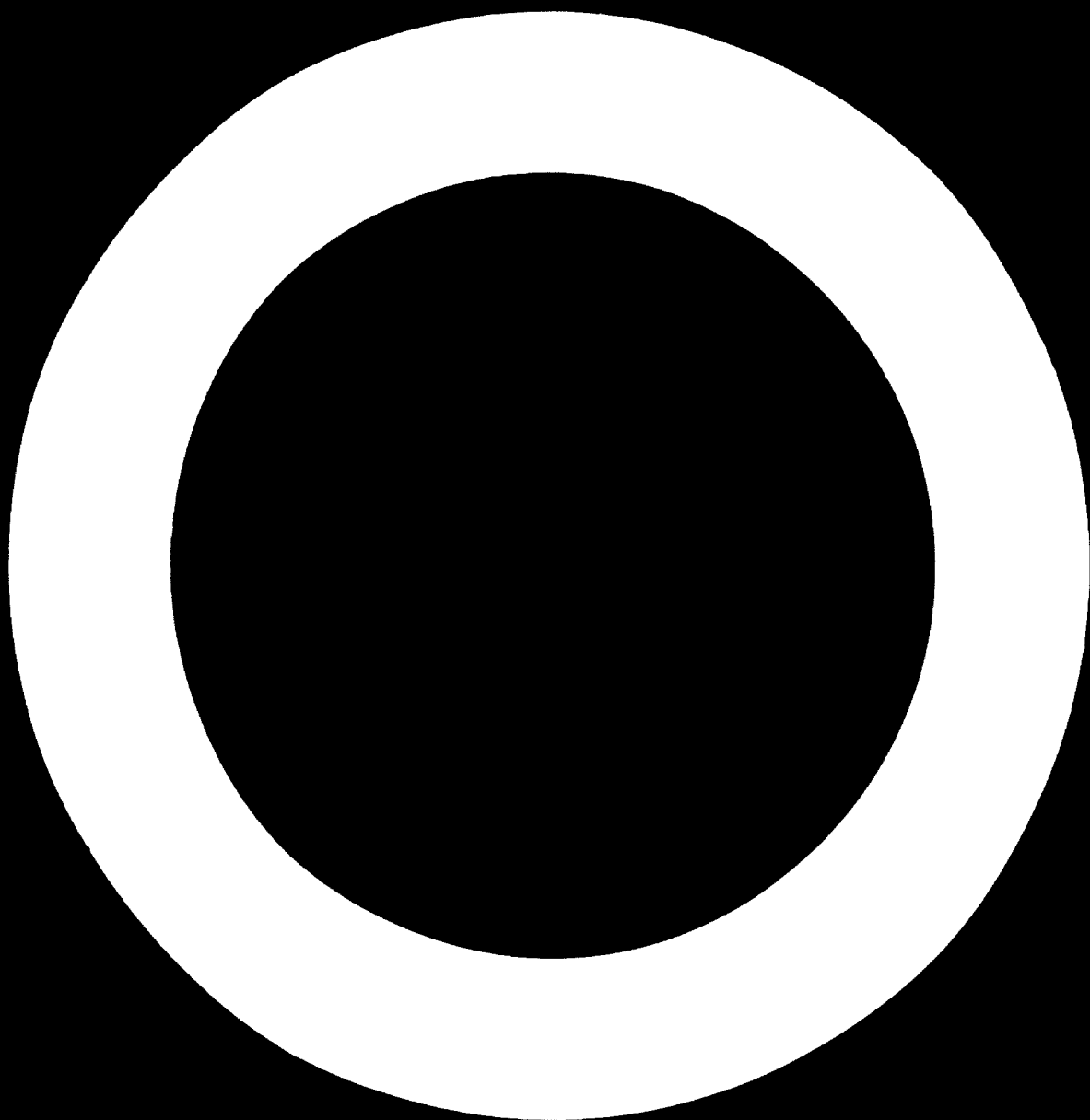
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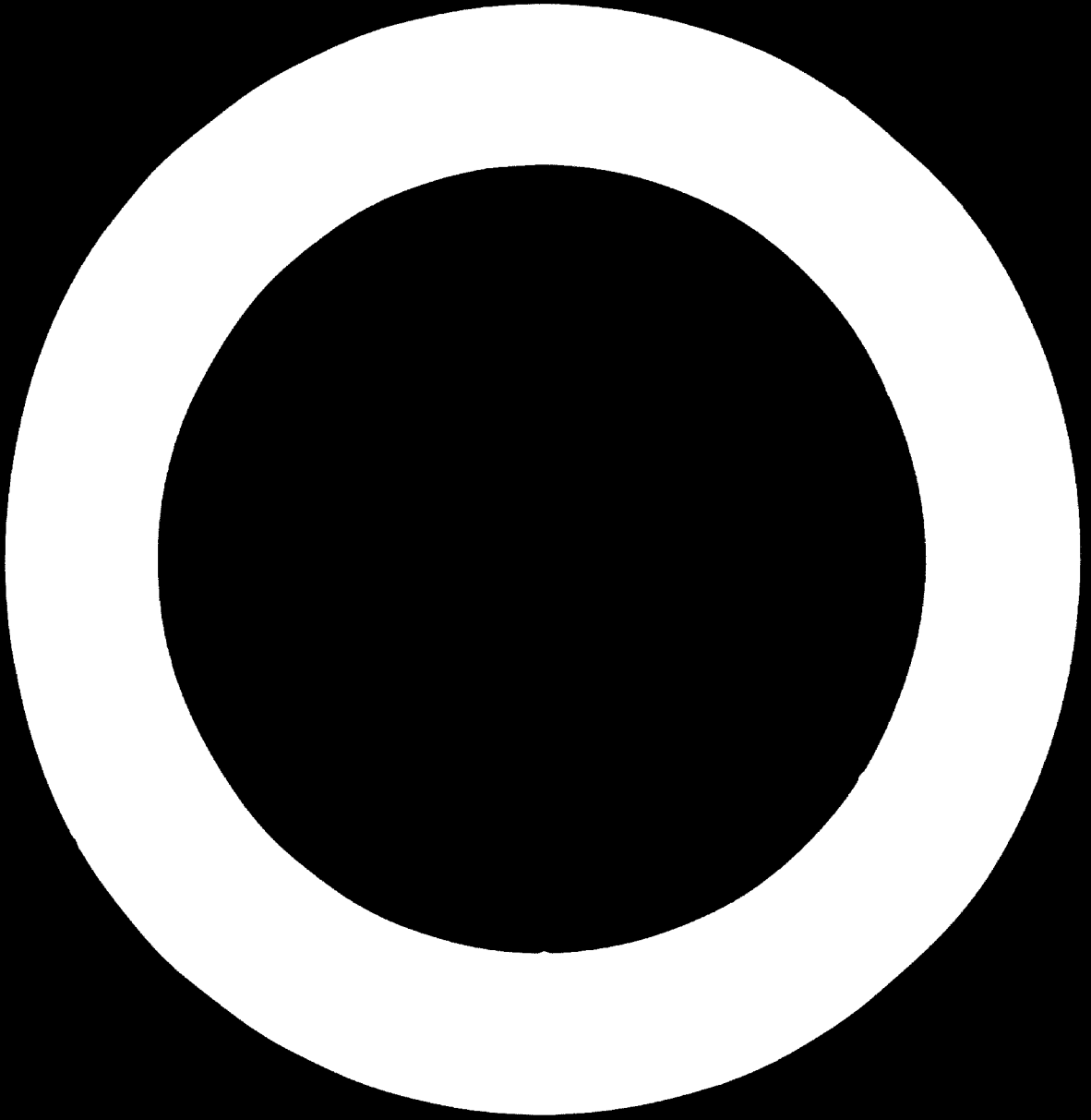
DP/KUW/71/507

**(R) KUWAIT.**

**Technical report:  
ASSESSMENT OF RAW MATERIALS  
FOR AN INTEGRATED WOOD-PROCESSING COMPLEX . (1976).**

**Prepared for the Government of Kuwait by the  
United Nations Industrial Development Organization,  
executing agency for the  
United Nations Development Programme**





United Nations Development Programme

INDUSTRIAL DEVELOPMENT AND CONSULTING BUREAU

DP/KUW/71/507

KUWAIT

Technical report: Assessment of raw materials for  
an integrated wood-processing complex

Prepared for the Government of Kuwait  
by the United Nations Industrial Development Organization,  
executing agency for the United Nations Development Programme

Based on the work of Gotthard P. Heilborn, expert in wood processing

United Nations Industrial Development Organization  
Vienna, 1976

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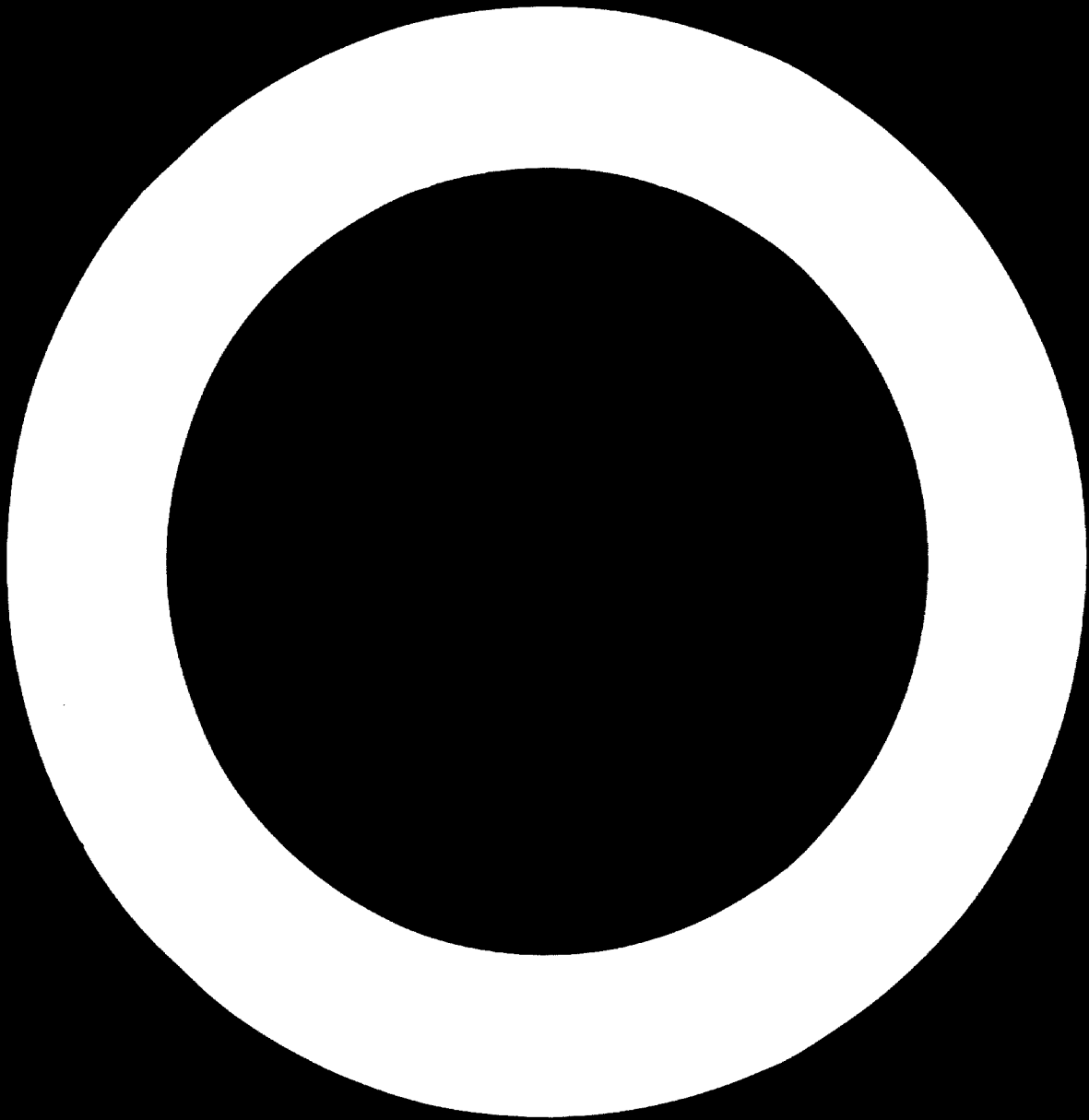
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### SUMMARY

The mission of the consultant (DP/411/71/507/11-07/25/02) formed part of the larger project "Industrial Development and Consulting Bureau" (DP/411/71/509). Specifically, he was assigned to assess raw materials for an integrated wood-processing complex to be established either in Kuwait or in a neighboring country providing a forest concession.

Although there is no forest in Kuwait, a substantial woodworking industry has developed there importing every year approximately 100,000 m<sup>3</sup> of natural timber, plywood and chipboard for the production of furniture, interior decoration, construction timber and prefabricated houses.

In the course of building up and developing its industry, the State of Kuwait and particularly the Industrial Development and Consulting Bureau of the Ministry of Commerce and Industry is interested in securing the supplies of wooden semi-finished products required by the woodworking industry. Therefore, the idea was conceived of setting up an integrated timber-processing complex in Kuwait which would be connected with logging concessions in South East Asia or Africa:

- (a) To produce the necessary logs out of the forest concession;
- (b) To ship those logs to Kuwait;
- (c) To process them in the integrated timber complex into the required quantities of sawn timber, plywood and chipboard.

Unfortunately, in the course of the first preliminary findings it was recognized that the export of logs from timber concessions might become impossible or at least doubtful. To assess the required raw material and to find out whether the integrated timber complex could be installed in Kuwait or must be set up near the forest concession, the United Nations Industrial Development Organization (UNIDO) was asked to engage an expert.

For the correct assessment of raw material it was first necessary to assess the present and the future demand in Kuwait and to find out for which purpose the timber was imported; this would answer the question of which species could be utilized.

Therefore, not only have statistics been collected in Kuwait, but manufacturers have also been visited and asked for their production lines, their timber requirements and their buying prices.

For the assessment of raw material, Malaysia and Indonesia were visited in South East Asia and Kenya, Swaziland and The United Republic of Tanzania in East Africa and Cameroon, the Ivory Coast, Liberia and Nigeria in West Africa. The results of the fact-finding missions indicated:

(a) That permanent log supply cannot be guaranteed from any country visited, which means that log supply to a Kuwait-based integrated timber complex cannot be secured;

(b) That it would also be much more economical to set up the timber complex in the country of the origin of the wood;

(c) That a Kuwait investment in the form of a joint venture for logging and processing of local timber for the purpose of exporting most of the products of such an integrated timber complex to Kuwait would be highly welcomed by many Governments;

(d) That West Malaysia offers the best opportunities, followed by Liberia and Cameroon.

From experience it is known that timber industries even when installed in the country of origin of the wood operate much more economically and enjoy a much better standing in the sharply fluctuating world market if they encompass not only sawmilling, plywood and chipboard manufacturing but have a wider and deeper integration for the purpose of better utilizing the forest and the timber brought into the factory. For that reason an integrated timber complex for the utilization of hardwood species was proposed, which would include many additional production lines partly for export to the world market and partly for supplying the local market in addition to the basic production lines considered to cover the demand in Kuwait.

In the course of the fact-finding missions, it was also recognized that the necessary softwood quantities could not be obtained from every country visited; therefore, facts have been collected on which to base an integrated softwood timber complex in Europe and possibly in Austria. A proposal has been worked out for a joint venture in Austria to produce the requirements for Kuwait in sawn softwood and in chipboard in addition to the production of softwood plywood, sawn timber, flush doors, veneer and chipboard for the Austrian and European market.

Finally, proposals have been worked out for the necessary actions to be taken for the implementation of hardwood and softwood projects, including the expected capital requirements.

In sum, it was concluded:

That setting up the integrated timber complex in Kuwait would not be feasible owing to uncertain log supplies

That an integrated hardwood timber complex in West Malaysia would be based on the most suitable conditions

That an integrated softwood timber complex in Europe and probably Austria would offer very suitable conditions

## 1. INTRODUCTION: HISTORY OF THE PROJECT

This is the report of a mission (DP/KUW/71/507/11-07/05 (03) which was a part of a larger project "Industrial Development and Consulting Bureau" (DP/KUW/71/507). The objective of the parent project, which was approved by the United Nations Development Programme (UNDP) and the United Nations Industrial Development Organization (UNIDO) as executing agency in 1973, was to strengthen the Ministry of Commerce and Industry of Kuwait and to provide assistance to the Government in elaborating its industrial development strategy and in accelerating the identification, appraisal and implementation of new industrial projects and in expanding existing projects.

In accordance with this general aim, the Government of Kuwait, in April 1974, requested a consultant to assess raw materials for an integrated wood-processing complex. His mission was to last four months and to include travel to Africa and South East Asia for the purpose of reviewing the pre-requisites and potentials for obtaining forest concessions. During his stay in Kuwait he was attached to the Industrial Development and Consulting Bureau of the Ministry of Commerce and Industry.

### 1.1. Pre-Feasibility Study

In 1973 the Ministry of Commerce and Industry had carried out a pre-feasibility study to set up an integrated timber complex which was supposed to be based on the supply of round logs from one or several forest concessions that would belong to the complex. In general, this was a good idea because the existing woodworking industry in Kuwait requires large quantities of semi-finished wood products every year which could be produced in the State of Kuwait itself.

However, the pre-feasibility study did not consider the new policies regarding the export of timber and round logs from the countries of the origin of the wood. Only a few countries in the world still allow the export of round logs, and even these have enacted laws for banning log exports in the near future. In the circumstances even a Kuwaiti-owned logging concession would soon not be allowed to export logs to the State of Kuwait so that the project would not be realistic.

Working conditions had also to be checked and compared because Kuwait is known for its labour shortage and only capital-intensive production lines may be considered for establishment in Kuwait. Unfortunately, wood processing is not capital- but labour-intensive.

While the study was based on import costs of 15 KD/m<sup>3</sup> for softwood and 30 KD/m<sup>3</sup> for red woods, present costs will have to be expected of 44 KD/m<sup>3</sup> for softwood and 62 KD/m<sup>3</sup> for red woods or hardwoods. Consequently, the raw material costs would be more than doubled.

Import statistics in Kuwait show that prices of the product have also increased. While the pre-feasibility study of 1973 was based on an average sales price for sawn timber of 44 KD/m<sup>3</sup>, the latest imports have prices ranging between 44 KD/m<sup>3</sup> and 68 KD/m<sup>3</sup> with a probable average of 56 KD/m<sup>3</sup> for sawn timber.

The results of the existing pre-feasibility study may be summarized as follows.

It is most likely that to set up an integrated timber complex in Kuwait would be economically possible, that is certain profits could be achieved, particularly if the integration were vertically and horizontally greater than proposed and if the timber were to be better utilized than considered.

However, the feasibility is not certain since a steady log supply based on a Kuwaiti-owned forest concession cannot be ensured for the next 20-25 years because all the governments of countries with timber as a national resource are interested in building up their own woodworking industry.

Also, the difficulties of securing the required land in Kuwait, its price, the enormous costs of buildings and civil works, and the labour shortage and costs are serious reasons against setting up the complex in Kuwait.

Owing to the fact that raw material could be produced much more cheaply than it would be sold, the profit margin for producing the raw material and processing it in another country would be much larger than could be achieved

in Kuwait. Similar projects in South East Asia have had a return on their investment within three to four years, whereas the pre-feasibility study of 1973 called for more than six years for a return on the investment. With steeply rising costs for imported logs, a period of up to 10 years may now be needed for a return on the investment if the project were to be set up in Kuwait.

Some cost calculations are made in paragraph 4.6, based on the production in a largely integrated complex. These compare different countries, including Kuwait, and demonstrate the difference in the possible profit margins.

The Ministry of Commerce and Industry has approved the project for the timber complex, however. It feels that this project will be completely dependent on the raw material supply of round logs; thus, the assessment of the raw material is the most important part of the project. In connexion with this assessment it must also be determined whether the permanent supply of round logs from an overseas concession to the State of Kuwait can be secured and whether the entire project might better be set up in the country of origin of the timber.

Accordingly the following job description was outlined for this mission.

1.2. Job Description

Background information

In 1970 Kuwait imported 57,000 m<sup>3</sup> of sawnwood and 19,000 m<sup>3</sup> of plywood. A small particle board mill produced only for the needs of a furniture plant integrated with it. Potential markets could also exist in the neighbouring countries of the Gulf. A pre-feasibility study for such a complex has already been prepared; the complex would utilize imported logs, with annual capacities of:

Soft sawnwood	40,000 m <sup>3</sup>
Hard sawnwood	30,000 m <sup>3</sup>
Plywood	20,000 m <sup>3</sup>
Veneer	1,000 m <sup>3</sup>
Particle board	20,000 m <sup>3</sup>

The purpose of the project would be to assess the prerequisites and potentials for obtaining a forest concession as a joint venture.

The consultant would have the following duties:

- (a) To obtain information on the prerequisites and potentials for a supply of raw materials for an integrated wood-processing complex to be established in Kuwait, or possibly in the developing country;
- (b) To assess the present demand for wood products in Kuwait and the neighbouring states and estimate trends for the future;
- (c) To review the existing pre-feasibility study;
- (d) To visit West African countries for obtaining one or more concessions;
- (e) To undertake similar trips to Indonesia and Malaysia and to East and Southern Africa - Kenya, Swaziland and the United Republic of Tanzania;
- (f) To report on the discussion to the officials of the Industrial Development and Consulting Bureau and those of the Ministry of Commerce and Industry;
- (g) To evaluate, in collaboration with his counterpart from the Bureau, the various alternatives and to recommend the best one for establishing an integrated wood-processing complex to cater to the needs of Kuwait for wood products;
- (h) To recommend any further technical assistance and measures.

The main work for this assessment of raw materials was done in the field. The following travel reports give a brief statement of the visits to various countries. An evaluation is then made of the collected material.

As regards the assessment of raw materials, the following facts should be stated in advance.

#### South East Asia

Many countries are already fairly cultivated and are continuously turning more forest into agricultural land. In such cases the forest concession is given for "clear cutting" whereby any ordinary forest concession only allows for "select cutting".

Whereby the clear cutting allows the concessionaire the absolute maximum utilization, a select cutting concession grants limited rights for the cutting of certain species or sizes of logs only.

Select cutting in South East Asia is usually based on the felling of "commercial" species above a specified diameter of the log at about 1.50 m height above the ground.

Another characteristic of South East Asian forests is that they consist of quite a few species per forest area and, therefore, select logging in



South East Asia is mainly based on age and diameter of the trees rather than on species.

#### East Africa

In East Africa only a few indigenous forest are left where rarely any species is dominant. Therefore, the forest departments do not give out any concessions for whole areas, but only the right to cut limited quantities of certain species out of specified areas.

Otherwise there are large areas of forest plantations, and cutting in plantations is allowed for thinning underaged forests or clear cutting aged forests.

#### West Africa

The main problem in West African forests is the large number of timber species growing together. Therefore, concessions are given out for select cutting of commercial and/or utilizable species. And since there are so many species growing together the so-called "density of the timber stand" is much lower, relatively, than in South East Asia. But this may be explained in an example.

In South East Asia about 15 species are considered commercial; and these another 25 may be utilizable but are not yet taken. However, in one area usually one to three species are dominant and another 5 to 10 are not cut; the latter are also not available in large quantities but scattered. Many different species are marketed under a common name, again reducing the number of commercial species.

In West Africa, however, at least 40 to 50 species are considered as commercial and at least the same number are uncommercial but utilizable.

Therefore, even if the forest in fact is as dense as in South East Asia, the "density of the commercial timber stand" is much lower. This, naturally, is the reason for the higher log costs in West Africa in general compared with South East Asia.

2. ASSESSMENT OF DEMANDS  
=====

2.1. Present Demand in Kuwait and Neighbouring States  
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For the assessment of demands the statistics of the State of Kuwait have been used and woodworking manufacturers in Kuwait have been visited. The local manufacturers in Kuwait were mainly visited for the reason to find out the utilization of the timber being imported into Kuwait and also, to find out whether softwoods are seriously required in Kuwait or probably being imported for any other reason.

The result was that manufacturers in Kuwait are producing mainly:

- furniture
- interior decoration
- all kinds of construction timber
- pre-fabricated houses

The second question was answered by the Kuwaiti manufacturers in a way that softwoods are presently imported because:

- they are lighter in weight
- they are light in colour
- they are easy to process

Pricewise, it was found that there was also a difference which means that Kuwait manufacturers are buying their softwood up to 25% cheaper than their tropical timber. Therefore, unfortunately, the original idea to produce larger quantities of only tropical timber cannot be considered. The production of exclusively tropical timber would technologically seem be possible it would, however, require a change of the market and the opinion

of the buyers which would cause difficulties. Consequently, it was decided to assess both softwood and hardwood concessions for the supply to Kuwait as originally mentioned in the job description. The required quantities mentioned in the job description have also been rechecked. The figures taken from statistics and shown in table 1 confirm the figures mentioned in the job description and have been used without any changes. However, it was found that due to a typing error the requirement of particle board (chipboard) is not 20,000 but only 2,000 m<sup>3</sup> per year. This means that an independent production of chipboard would be not very economical and a larger production with a local market must be found.

## 2.2. Future Demand Projections

The fact is that Kuwait has a woodworking industry which is outstanding for the whole area. Consequently this woodworking industry covers the demand of the surrounding countries.

Certainly, the demand in Kuwait and in the surrounding countries will be increasing during the next 10 or 20 years. It is, however, a question whether this increase will have to be completely covered by the woodworking industry of Kuwait or whether the surrounding countries may set up their own timber industries. Observations of enquiries from Iraq, Saudi Arabia and other Gulf States have shown that those countries are intending also, to set up a woodworking industry in their country to cover their own demands. For this reason it was decided to consider no further increase in demands but concentrate fully on the figures given in the job descriptions and being confirmed by the statistics of imports.

Table 1 : Import of Wood Products in Kuwait

	SEMI-MANUFACTURED			PLYWOOD			CHIPBOARD		
	TONS	K.D.	K.D./TON	TONS	K.D.	K.D./TON	TONS	K.D.	F.D./TON
1966	55.816	2,030.452	36.378	5.654	455.986	80.648	562	41.274	73.440
1967	81.509	2,831.875	34.743	6.227	578.203	92.854	1,208	98.134	81.230
1968	46.212	1,757.526	38.032	7.532	653.700	86.790	731	59.027	80.748
1969	62.427	2,238.670	35.861	9.541	768.833	80.582	855	55.911	65.390
1970	31.445	1,484.460	47.208	21.322	1,057.542	49.599	-	-	-
1971	48.771	2,122.889	43.528	8.471	673.887	79.552	64	5.258	81.375
1972	40.633	1,815.384	44.678	14.445	1,019.538	71.572	246	11.418	46.537
1973	37.025	2,032.140	54.886	27.500	3,053.963	109.125	494	34.938	70.725
1974 (6 mths)	29.834	2,329.152	78.070	10.124	1,316.419	130.030	818	108.610	132.775
QUANTITIES CONSIDERED									
tons/year	39.000			13.000			2.100		
approx. m <sup>3</sup> /year	70.000			20.000			3.600		

Source: Kuwait Statistics of Imports

3. TRAVEL REPORTS  
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3.1. Travel Report Far East  
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Travelling to Malaysia and Indonesia between 16th April  
and 14th May 1975

The following report is prepared as a brief statement of the detailed discussions held during the trip to Malaysia and Indonesia for the purpose of the assessment of raw material for a joint venture timber project to be set up either in Kuwait or in the country of the origin of the timber in connection with a timber concession. Participants on the trip were

- Mr. Najeeb Al-Foraih, the counterpart to the UNIDO expert, the Mechanical Engineer in the Industrial Development and Consulting Bureau, Ministry of Commerce and Industry, Kuwait, and
- Mr. Gotthard P. Heilborn, Heilborn GmbH, 8200 Rosenheim, West Germany, as short term Consultant of UNIDO, Vienna.

3.1.1. West Malaysia

18th - 26th April 1975  
and 30th - 3rd May 1975

Malaysia is a Federation of States. Whereby the general planning and also the finance of project is mainly in the hands of the Central Government, the individual States are having their own authorities to realize State owned projects. Usually this is done by the State Development Corporation and those corporations

are fully owned by the State Government. Projects are either fully owned by the State Development Corporation or are joint venture operations between the State Development Corporation and other partners.

West Malaysia does not allow any round log export which was the reason that all discussions in West Malaysia were held for a timber concession in connection with a timber project.

Timber concessions are given out by the State Government and, therefore, in the federal capital of Kuala Lumpur only U.N.D.P. and FIDA (Federal Industrial Development Authority) were visited while all further discussions were concentrated to the States.

Several of the West Malaysian States have either no or insufficient forest to consider a timber complex. Other States have very much of forest area but they have developed State owned forest industries already and future industries will only be given to interested joint venture parties on a basis which is similar to tendering and, therefore, not very favourable.

Other States are too far in the North bordering to Thailand and, therefore, too far from the local market. Therefore, in West Malaysia two States have been chosen which both show a very good prospect for setting up such a timber complex in connection with sufficient logging concession area:

The States are Negeri Sembilan and Trengganu.

The two States in East Malaysia are both covered with dense forest. In Sabah log export is very familiar but the costs for logging are so extremely high that a comparison with other States would have been disadvantageous. For that reason, in East Malaysia only the State of Sarawak was visited.

In the federal capital of Malaysia, Kuala Lumpur, we first visited UNDP where we could not get any information except that we were directed to the FAO forestry project in Kuala Lumpur. There we visited Mr. Ken Sargent, FAO, who is with the project since long. He explained to us briefly that forest in many parts of West and East Malaysia is fairly harvested and not enough left to consider our project. But he confirmed that States such as Negeri Sembilan, Trengganu and Sarawak have enough resources left.

Afterwards we visited FIDA (Federal Industrial Development Authority), where we met their timber industries specialist, Mr. Ooi Seng Hock. Basically, he gave us the same information as Mr. Sargent and recommended the same States to be visited for the discussion of our project.

#### Project in the State of Negeri Sembilan, West Malaysia

The capital of the State of Negeri Sembilan is Seremban and we made several visits there. In the course of our visits to Seremban we were received by

The Chief Minister of Negeri Sembilan, Datuk Mansor bin Othman

The General Manager of the State Development Corporation and also the Chairman of Nestin, Tuan Sheikh Mustapha

The Secretary of Nestin Sendirian Berhad, Datuk A. Razak Yusof

The Director of Nestin Sendirian Berhad, Datuk Ariffin

The Director of Nestin Sendirian Berhad, Datuk Kadir.

The State of Negeri Sembilan is one of the small States in Malaysia, however, the State Government is very keen to develop the State very efficiently. The Chief Minister, Datuk Mansor bin Othman, expressed his opinion that a co-operation in this forest project would be of interest for the State, however, he believed

that such a joint venture project would certainly be only the beginning for a larger co-operation in the future which could lead to a chain of other projects in the State such as oil palm or rubber plantations, the development of the new harbour in Port Dickson with Hotel projects there etc.

The State of Negeri Sembilan has not very large forest resources, however, since the Government is interested to turn the forest land largely into agricultural area, it is a different kind of logging concession which is available there compared with other States and countries. While a logging concession usually considers "select felling" and allows only a certain cutting rate out of the forest, which means that only useful trees with regard to age and/or species will be selected and cut while the forest itself remains for natural regrowing, in Negeri Sembilan the forest will be available largely for "clear cutting" which means, that a maximum of timber can be removed from the forest while all the rest will then be burnt to make the land clear and available for agricultural usage.

This means that a far larger amount of timber will be available from the concession area than in other States and concessions.

The State of Negeri Sembilan is already considering to set up an integrated timber complex within the State, whereby the log supply will be based on the before mentioned clear cutting of forest areas being available in the State. A company by the name of Nestin Sendirian Berhad (Negeri Sembilan Timber Industries Private Limited) was incorporated in 1971 and has started logging at the end of 1974. In January 1975 a feasibility study for an integrated timber complex at Kuala Pilah, Negeri Sembilan, Malaysia, was worked out showing all the background informations about the company, the objectives of the project, the basic considerations regarding markets, raw material and the general



conditions for processing of timber in the State as well as, the technical planning for the project which includes the following production lines:

- sawmilling
- plywood
- blockboard
- flush doors
- woodworking
- mouldings
- truck flooring
- wood turnings
- roundings
- carvings
- pre-fabricated houses

as well as the complete cost calculation and the financial planning of the project for a period of 5 years in advance.

The conditions in Negeri Sembilan would be very favourable, since forest concessions are given and will be given to Nestin based on an agreement between the State Government and the State Development Corporation, who is the major shareholder in Nestin.

Also the project will be very favourable because the State is situated on the west coast of West Malaysia and distances between the forest concession area and the town of Kuala Pilah where the factory is supposed to be installed (about 100 kms), as well as the distances between Kuala Pilah and the harbour of Port Klang, as well as the distance between Kuala Pilah (about 140 kms), and the densely populated area around the federal capital of Kuala Lumpur (local market) are all very short (about 100 kms).

Joint venture for logging and for the integrated timber complex is not only possible but highly welcomed. The logging costs are the lowest altogether due to the short distances for transportation and also due to the density of forest and the fact that clear cutting of the forest is possible. According to the feasibility study the logging costs at the logging camp will be just about 12.- US\$/m3.

Infrastructure in West Malaysia is excellent that means that a railway is available as well as very good road connections. The production costs are also relatively low and, therefore, the feasibility of this project is excellent. Quite a number of by-products will be produced besides the exportable main products, which can easily be sold in nearby populated areas, representing a considerable local market.

In total, this project would be most recommendable for a joint venture with Kuwait, however, the State Government is proceeding with the project on their own and may succeed in getting their finance arranged before a decision in Kuwait has been made.

Project in the State of Trengganu, West Malaysia

The State of Trengganu is situated at the east coast of West Malaysia. During our visit we were received by

The Chief Minister, Datuk Wan Mokhtar bin Ahmad

The State Secretary, Datuk Wira Jaya

The State Assembly Member, Wan Adnan Bin Ismail

The State Financial Officer, Encik Abdul Rahman Bin Nasir

The Managing Director (subsidiary of SEDC),  
Encik Mustaffa Bin Muda

The State Director of Forestry, Trengganu, Encik Baharuddin  
Bin Haji Ghazali

The General Manager Trengganu Tengah Development Authority,  
Wan Nik Bin Ismail

The State Development Officer, Encik Hamzah Bin Ahmad  
The General Manager, State Economic Development Corporation,  
Encik Muda Bin Yusof,  
The Assistant Development Officer, Encik Omar Bin Pilus

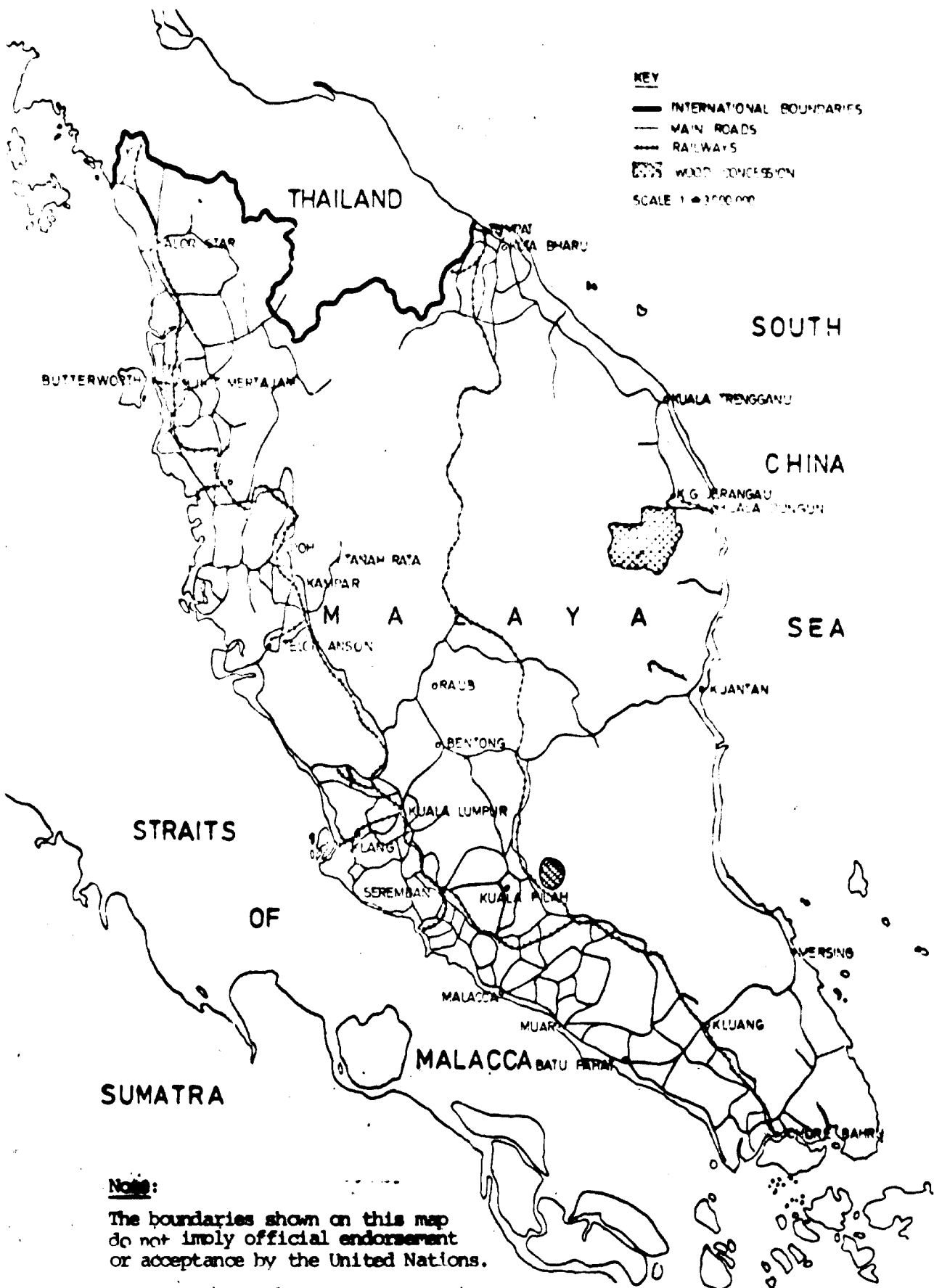
The State of Trengganu has a very large forest area which covers about 1 million acres. This forest area is divided in four timber projects out of which the Dungun Integrated Timber Complex is the most interesting one for the joint venture considerations of the State of Kuwait. This Dungun area covers 250,000 acres or 100,000 ha with a timber stand of about 63 cbm/ha which is very dense and economical. On a 25 years cutting scheme this means, that the Dungun timber complex could be based on an annual log input of about 250,000 m<sup>3</sup>, which would be easily enough for the requirements of the industry in Kuwait, plus sufficient allowance for a future growth rate.

A feasibility study for this project was worked out by a Romanian team of experts, however, the report was not accepted by the State Government since several figures were wrongly estimated and not based on facts.

Our own observations have shown that the logging costs will be somewhere in the range between 10.- and 12.- US\$/m<sup>3</sup>, which will bring the costs of the logs delivered factory site up to 14.- to 16.- US\$/m<sup>3</sup>.

The logging costs are in this higher range in Trengganu since quite some roads will have to be built into the Dungun forest where, so far, only few roads are existing.

A joint venture for the logging concession and for the integrated timber complex is not only possible but highly welcomed.



**Note:**  
The boundaries shown on this map do not imply official endorsement or acceptance by the United Nations.

Infra-structure is fairly well available in Trengganu, however, it must be considered that the final products have to be transported, for the time being, to the west coast harbour of Port Klang (about 450 kms) until the east coast harbour of Kuantan will be ready and opened sometimes in 1978. The distance between the logging area and the factory site around Chukai is only about 80-100 kms while the distance between the factory site and the harbour of Kuantan will only be approximately 60 kms.

Products for the local market will be partly sold in the State of Trengganu but the majority will have to be brought to Kuala Lumpur which is situated at a distance of about 410 kms from the factory site.

The Government of the State of Trengganu expressed that they would be extremely interested in a continuous contact with Kuwait for the development of the timber project and a number of other projects which they have considered already. These are projects for

- cement production
- glass production
- cattling
- ground nut oil production
- tourism

3.1.2. Project in the State of Sarawak, East Malaysia

In the State of Sarawak we were received by

The General Manager of Sarawak Timber Industry Development Corporation, Mr. Murti,

The Chairman of the Sarawak Economic Development Corporation, Mr. Amin Satem.

While the western part of the State of Sarawak is fairly populated and a certain infra-structure is already existing the population in the eastern part is very scattered and infra-structure is almost not existing. Sarawak's forests have been rich in Ramin, a timber species which is white, can be processed very easily and has conquered the market in Europe for mouldings and furniture components. The timber concessions for Ramin have been in the hands of a few Chinese families, who became very rich in a very short time. The government has realized the large value which is in its natural forest resources and is, therefore, now trying to make the best out of it.

The timber potential in Sarawak is large. In total, about 3.0 million acres or 1.2 million ha are available as forest area with a timber stand of at least 100 million tons or 180 million m<sup>3</sup>. However, not all of this timber stand is for commercial use and at least 12% of even good areas cannot be counted for logging due to difficult terrain.

Log export from Sarawak is not allowed. Logging concessions are given out on a 25 years period with the obligation of a cutting rate of a minimum of 100,000 tons or 180,000 m<sup>3</sup> /year. The main commercial species in the forest are Meranti, Kapur and Keruing, representing about 40-45% of the forest.

Joint ventures in the State of Sarawak for logging and processing are welcomed, however, the majority of shares should be in the hands of Malaysian citizen. Foreign investment should not be less than 30% but must not be more than 49%.

The commercial timber stand in the State of Sarawak is between 35 and 45 m<sup>3</sup>/ha and the logging costs including transportation to the factory site are in the range between 15.- and 20.- US\$/m<sup>3</sup>.

KEY  
— INTERNATIONAL BOUNDARIES  
— MAIN ROADS  
— RAILWAYS  
SCALE 1:1000000

Note:

The boundaries shown on this map do not imply official endorsement or acceptance by the United Nations.



No specific logging area was offered to us but an area near the one shown in the annexed map could be considered. The harbour of Bintulu is under construction but until about 1980 trans-shipment to Miri or Singapore will have to be considered.

3.1.3. Indonesia

28th - 30th April 1975

U.N.D.P.

At U.N.D.P. we were received by Mr. Gunnar Kastengren, the Senior Industrial Development Field Adviser of UNIDO in U.N.D.P. Jakarta. Mr. Kastengren had prepared our visit very well already and we, therefore, were received by most important government executives in Jakarta.

Board of Investment

At the Board of Investment we were met by Mr. Swedi, the Chief of the Investment Promotion Bureau. He informed us that in Indonesia it is generally impossible already now that foreigners participate in a logging concession. We were given some informative literature and there it reads as follows:

"The present policy, however, does not allow foreign interests to have a concession holding in forestry, either directly or through a joint venture. A foreign company may under certain circumstances act as a contractor to an Indonesian concession holder".

Joint venture companies in Indonesia must also have a majority shareholding of Indonesians and the related regulation reads as follows:



"The final accomplishment of this policy will ultimately ensure that Indonesian participation in new existing foreign ventures shall not be less than 51%. The foreign interest should provide clear opportunities for Indonesian parties or Indonesian interests in general to gradually increase their equity participation. This can be done either by straight forward sale of shares or through the stock market".

This means that a joint venture company with Indonesian majority could be formed to

- perform the logging operation on a contract basis with the concession holder
- process timber, or at least part of the timber cut in the forest, into the products being required in Kuwait,

however, it will not be possible that this joint venture company can be the concession holder. For this reason the joint venture company will always depend on the willingness of the concessionaire to fulfil the contract. Because of this regulation a conflict of interests over the prices for the logs is also almost unavoidable.

#### Ministry of Trade

At the Ministry of Trade we were received by Dr. Ibrahim. We were informed that exports of products from Indonesia are not subject to restrictions by now, except that prices are controlled. That means that companies exporting products from Indonesia must follow the government's export prices check list and cannot sell at any price they want.

The government realizes that present exports are mainly directed to Japan and welcomes, therefore, any further export opportunities to other countries.

The export of products is subject to payment by Letter of Credit. Other payment terms are not allowed for the export of products from Indonesia.

The export is also subject to an export tax which at present is

- 0 % for finished products
- 0 % for plywood
- 0 % for parquet flooring
- 10% for raw material = logs
- 10% for sawn timber
- pending and undecided for mouldings and truck flooring
- pending and undecided for railway sleepers.

Ministry of Agriculture

Directorate General for Forestry

Here we were received by the Director General for Forestry, Mr. Soedjarwo, and the Director of Production, Mr. Soemarsono. We were informed that most of the concessions in Indonesia are given out already that means that the Directorate General for Forestry does not have any forest concessions available to be given to a new joint venture company. This would also not be allowed due to the regulations. Mr. Soedjarwo recommended to get in contact with several large Indonesian concession holders. We were given altogether six names and addresses of companies which we should contact during our visit.

Indonesian Woodworking Association (Masyarakat Perkayuan Indonesia)

Here we were received by the President of the association, General Taswin A. Natadiningrat. General Taswin confirmed basically the information we had received already and also recommended us to

get in contact with concession holders operating larger concessions already. We were promised to get a complete list of all concession holders in Indonesia (which, unfortunately, was never received).

#### Various Concession Holders

In the course of our programme we then visited a number of concession holders and had discussions with them. The summarized result of those discussions was:

1. Due to the lack of liquid funds and the very large demand of capital for the development of timber concessions in connection with the necessary logging operation and transport arrangements it is very easy to find a joint venture partner in Indonesia.
2. Because of so many Indonesian companies could be interested in a joint venture it would be necessary to select the future partner very carefully, which could only be done in the course of a feasibility study.
3. Generally, however, the problem of the logging contract will cause a conflict of interests since joint venture logging operations are not allowed by the government.
4. Logging concession with very favourable conditons. (short distance to the harbour, dense timber stands of logs with large diameters and a high market value) are all taken and surely harvested already and practically no more available, not even on a contract basis.
5. Due to the longer distances of transportation between the logging area and a possible production site the logging costs will be always in the range between 25.- and 30.- US\$/m<sup>3</sup>.

6. The population in the forest areas is very scattered and it is, therefore, necessary to set up the production site somewhere in a populated area which is either on the island of Java or near the harbour towns in Sumatra or Borneo. The setting up of a factory near the harbour towns in Borneo or Sumatra also causes high labour costs, since labour force is rare and expensive. Setting up a production site in Java, however causes additional freight costs of about 5.- US\$/m<sup>3</sup> of round logs for the transportation of the logs from the logging port on Borneo or Sumatra to the factory site on Java.

3.2. Travel Report Africa  
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Report travelling around Africa between  
21st June 1975 and 20th July 1975

The following report is prepared as a brief statement of the detailed discussions held during the trip around Africa for the purpose of the assessment of raw material for a joint venture timber project to be set up either in Kuwait or in the country of the origin of the timber in connection with a timber concession. Participants on the trip were:

- Mr. Issa El-Mazidi, acting Industrial Development and Consulting Bureau Director and counterpart to the Project Manager, Ministry of Commerce and Industry, Kuwait, and
- Mr. Gotthard P. Heilborn, Heilborn GmbH, 8200 Rosenheim, West Germany, as short term consultant of UNIDO, Vienna.

3.2.1. Egypt

21st - 23rd June 1975

Our trip started from Egypt where Mr. El Mazidi and I have joined together. Our first state then was Ethiopia.

3.2.2. Ethiopia

23rd June 1975

We were met by Mr. K. Rudy Meyer, the regional Forest Industry Advisor, and the Chief of the ECA-FAO Forest Industries Advisory Group for Africa. His address is:

Mr. K. Rudy Meyer  
Chief, ECA-FAO Forest Industries  
Advisory Group for Africa  
Africa Hall  
ECA-Industry Division  
P.O. Box 3011  
Addis Ababa, Ethiopia

Mr. Meyer gave us the following advice:

Kenya - Besides of some concessions which are still available for indigenous forests there are many plantations of soft wood available, however, Mr. Meyer doubts it very much whether those plantations would be big enough to supply the required quantity of soft wood timber.

United Republic of Tanzania - The conditions in Tanzania are much more favourable for the project since larger areas of natural forests are still available and a few plantations are already there for soft wood. There could be one possibility in Sao Hills.

It is also to be mentioned that Tanzania provides a special freight fare for products if those products are supposed to be for export purpose.

Swaziland - There are big plantations available in Swaziland, however, all of them are in the hands of private companies. The largest plantation area is owned by Peak Timbers, a subsidiary company of Anglo-American.

Malawi - There is some forest available in Malawi. The forestry office is in the new capital and the man to be contacted there is Mr. Logie. In connection with Malawi Forest the transportation

costs must be carefully checked because those ones are rather high.

**Madagascar**

- Also Madagascar is a country which would be worth to be visited, since there are large areas of natural hard wood content available. However, those ones are not very accessible. We are advised to contact FAO Rome about some projects at the West Coast.

**United  
Republic  
of Cameroon**

- Mr. Meyer mentioned the FAO project in the Deng-Deng area. FAO has also made an inventory there. The good areas in the south and southwest of the country are already taken and there is not much left.

There is to be seen Mr. Petroff, the manager of the FAO project and Mr. Jozef Awunti, the Deputy Minister of Agriculture and Forestry.

**Nigeria**

- There is not enough raw material left in Nigeria but it might be possible to take over one of the existing forest concessions. Generally, Mr. Meyer does not expect many prospects for our project in Nigeria.

**Ivory Coast**

- The government of Ivory Coast is interested and must be contacted. For example, there is an area of about 1 Mill. hectare available north of the harbour of St. Pedro in the western part of the country. It will be advisable to see the Minister in Charge in the Ivory Coast and Mr. Locatelli of B.D.I.

**Liberia**

- The forest in the eastern part is good whereby the forest in the western part is not good. Concessions should be still available, because many of the

given out concessions are not used yet. We will likely find great interest in joint venture even for forest areas which are close to the coast.

We must meet Mr. Frank Werner, German Forestry Project (UNDP), and Mr. Milborn Thornes, the Vice Minister of Agriculture.

Gabon - It would probably be of interest for the project to include also Gabon into our trip because there is still considerable forest area available in the third zone. Unfortunately, this third zone is all far inside the country.

### 3.2.3. Kenya

23rd - 29th June 1975 and 2nd July 1975

#### UNDP

In the UNDP office we met Miss Griffin who is the secretary of Mr. William J. Millager who was out of town and whom I was supposed to meet in Dar es Salaam. Miss Griffin arranged very properly all the meetings with the government officials.

#### Ministry of Commerce and Industry

Here we met Mr. E.C. Kotut, the Director of the Industrial Survey and Promotion Center in the Ministry of Commerce and Industry and his advisor, Mr. E.W. Espenhahn. The result of the discussions was that no forest concessions are available in Kenya anymore but there might be many possibilities for joint venture operations. Further details are supposed to be collected from the Forestry Department.



Forestry Department

Here Mr. Mburu, the Chief Conservator of Forestry, was unfortunately not available but we met with Mr. Ndegwa, who is his assistant. The result of the discussions was as follows:

In Kenya concessions for a certain timber area are no more existing and no more available. The Forestry Department and the Ministry will only give out a certain right to explore certain timber species in a certain so called "Licenced Area". Such a "Licence Area Concept" means, that a company is allowed to operate a forest and to remove specific species and specific quantities out of this forest.

We have mentioned that we need approximately 40 - 50,000 m3 of softwood sawn timber per year which means a log input into the sawmill between 80,000 and 100,000 m3 annually.

We were informed by Mr. Ndegwa that the present softwood cutting rate in Kenya is about 300,000 m3/year out of which about 20% which means 60,000 m3 (log input) would be available for export purpose. The same figures are valid until approximately 1980.

After 1980 the cutting rate will be increased and after 1985 it will be reaching an amount of about 500,000 m3/year of logs. However, the government expects the local consumption also to be rising proportionally that means, that after 1985 also about only 20% of the total logs cut will be available for export which means about 100,000 m3/year. However, this would be required for our project already now as log input and not only in 1985.

Plywood export will not be possible for next 30 years.

Elgon Olive would be available to produce fancy sliced veneer which could then be exported. Also chipboard might be possible to be produced for export purpose from waste being available at the country's sawmills. The government would also be interested to export fibre boards from the newly opened fibre board factory of Timsales.

For the quantity of 60,000 m3 log input per year which would probably be available it was recommended to consider participation in several existing sawmills. For that reason the following companies were recommended to be contacted:

Mr. Muchiri  
Kitiro Sawmills  
Elburgon and Molo

Mr. Hajid Singh  
Kaptagat Sawmills  
Kaptagat

In the further part of the discussion Mr. Ndegwa mentioned that the government would be particularly interested in the export of sliced veneer made out of Elgon Olive or African Olive and also in the export of chipboard which could be made out of local waste and eucalyptus. For that however, a feasibility study would have to be worked out.

#### Timsales

Here we met Mr. Henson, the Managing Director of Timsales Group of Companies in Kenya. Also Mr. Henson confirmed that by now probably 20,000 to 30,000 m3 of sawn timber annually would be available for export. This quantity could be increased up to 40,000 to 45,000 m3 after 1985 and up to 100,000 m3 by the end of the century.

The Timsales Group could, probably, make available for export approximately 9,000 m<sup>3</sup>/year from their group companies Amalgated Sawmill and Sokoro Sawmill. This would be almost 100% Cypress now but later it would be also mixed with pine. Out of their own production this quantity could probably be increased to 18,000 m<sup>3</sup> by 1990 and to 30,000 m<sup>3</sup> by the end of the century.

A certain problem will be the transportation of the softwood to Kuwait because it will be necessary to have a big storage area available near the harbour side which is now not existing there.

Mr. Henson also mentioned that in Kenya it is necessary to have

- a logging licence for any kind of logging operations
- a factory licence for any kind of production, and
- an export licence for the export of any produced goods.

There is also a New Project Committee which decides about deduction of taxes, for example the 10% sales tax.

Eastern Rift Saw Mills Ltd.

Following the recommendation of Mr. Henson of Timsales we have visited Eastern Rift Saw Mills Ltd., who are interested to sell their sawmill. Present production is about 300,000 cu.ft. or 8,500 m<sup>3</sup>/year in log input or approximately 3,500 m<sup>3</sup> of sawn timber output per year.

Sokoro Sawmills Ltd.  
Sokoro Plywood Ltd.  
Sokoro Fibre Board Factory

Following the recommendation of Mr. Henson we have also

visited the above mentioned three factories in Elburgon. The Plywood factory produces mainly tea-chests on very old machines and also the machines in the sawmill are very old. The fibre board factory is new and not in full production yet.

#### Summary

As summary to the visits in Kenya it must be said that there will be not enough raw material available to produce the annual quantity of softwood sawn timber required and even the before mentioned 50% of the required quantity would not be available from one source alone but probably only from 3 or 4 different sawmills.

#### Kuwait Embassy Nairobi

In the course of our visit to Kenya we have also visited the Kuwait Embassy in Nairobi. During this visit we were received by the Charge D'Affairs, Mr. Jasim M. Al-Sabbagh.

#### Mombasa

In Mombasa we visited a small factory of Mr. Adamjee by the name of Coast Sawmills Ltd. and we were also shown around the harbour to learn about the harbour facilities of this most important port along the whole East Coast of Africa.

#### 3.2.4. United Republic of Tanzania

29th June - 1st July 1975

#### Ministry of Commerce and Industry

We were received by Mr. Jamal, the Minister for Commerce and Industry. He expressed that a joint venture with Kuwait would be very much in the interest of the Tanzanian Government and

would be most welcomed for the country.

Ministry of Natural Resources and Tourism

We were received by the Minister of Natural Resources and Tourism, Mr. Makame and his Principal Secretary Mr. Mulokosi. We were advised that a joint venture between Tanzania and Kuwait would be most welcomed and that we should not look only into softwood timber resources from Tanzania but that Tanzania would be interested to get the whole project including the plywood veneer and chipboard production to be based on existing hardwoods.

Forestry Department

We met Mr. Charles S. Mmbando, the Director of Forestry. The forest areas are now about

- |                                     |             |
|-------------------------------------|-------------|
| - softwood plantations              | 45,000 ha   |
| - hardwood plantation (mainly teak) | 6,500 ha    |
| - natural regeneration              | 150,000 ha. |

Specially the softwood and hardwood plantation areas are expanding about by 50% per year and will reach a very big area already by 1980. Tanzania's area is covered by about 50% by forest and part of their softwood plantation are considered for the production of pulp and paper.

Presently about 14,000 to 15,000 m<sup>3</sup> of hardwood sawn timber are exported per year and this will be increased to an export of about 25,000 m<sup>3</sup>/year in the near future.

The government is very interested in joint venture for the export of hardwood sawn timber, however, also softwood sawn timber could be made available if the whole project will be con-

sidered in Tanzania.

The question of concessions is handled in approximately the same way as in Kenya that means, concessions for complete areas are not available, however, exclusive licences are available for certain quantities of certain species to be cut out of certain areas.

Special attention is to be drawn to the fact that certain hardwood species are available only in Tanzania and might create a very good export market.

Tanzania Wood Industry Corporation (TWICO)

Unfortunately, neither Mr. Daniel Lyamuya, the General Manager of TWICO, nor Mr. K.S. Chunsi, the Assistant General Manager of TWICO, nor Mr. Jestus Mapesa, the Senior Industrial Economist of TWICO were in Dar Es Salaam at the time of our visit. Therefore, we discussed the possibilities with Mr. J.N. Mushi, the Export Manager of TWICO, Mr. Gunnar Kvarnaeck, the Forest Industries Economist of TWICO, Miss Mtango, a Planning Economist of TWICO and Mr. D.D.S. Scorer, the Advisor on Export of Timber in the International Trade Center Project of the Ministry of Commerce and Industry, who is also assigned to TWICO. The result of the discussions was that actually no softwoods are available for export in the moment, however, they could be made available if Kuwait considers to set up the complete project in Tanzania.

Second visit to the United Republic of Tanzania

21st - 22nd September 1975

TWICO

This time Mr. Lyamuga and Mr. Mapesa were available for discussions which have been prepared by Mr. Scorer.

However, it was stated that no forest area in Tanzania would be large enough to cater for the complete requirements of the project, i.e. about 180,000 m<sup>3</sup>/year of hardwood and about 90,000 m<sup>3</sup>/year of softwood logs. All forest areas are scattered over the country and every forest area is just big enough to guarantee a continuous log input of about 30,000 m<sup>3</sup> per year.

Since we need about 270,000 m<sup>3</sup>/year of total softwood and hardwood log input this means that the production would have to be split on to about 7 - 10 different places which would all be near a forest area. For example there are 2 plywood factories existing in Tanzania with an output of about 9,000 m<sup>3</sup>/year. Those ones could be expanded to the output for our project.

Also there are integrated timber complexes in the plan for the production of plywood, veneer, blockboard, flush doors and sawn timber. But with respect to the timber being available for logging in the nearby area those timber complexes will each have a log input of about 30,000 m<sup>3</sup>/year only.

Such new complexes are planned for Amsha (expansion), Tabora, Mbeya, Sao Hills and Morogoro.

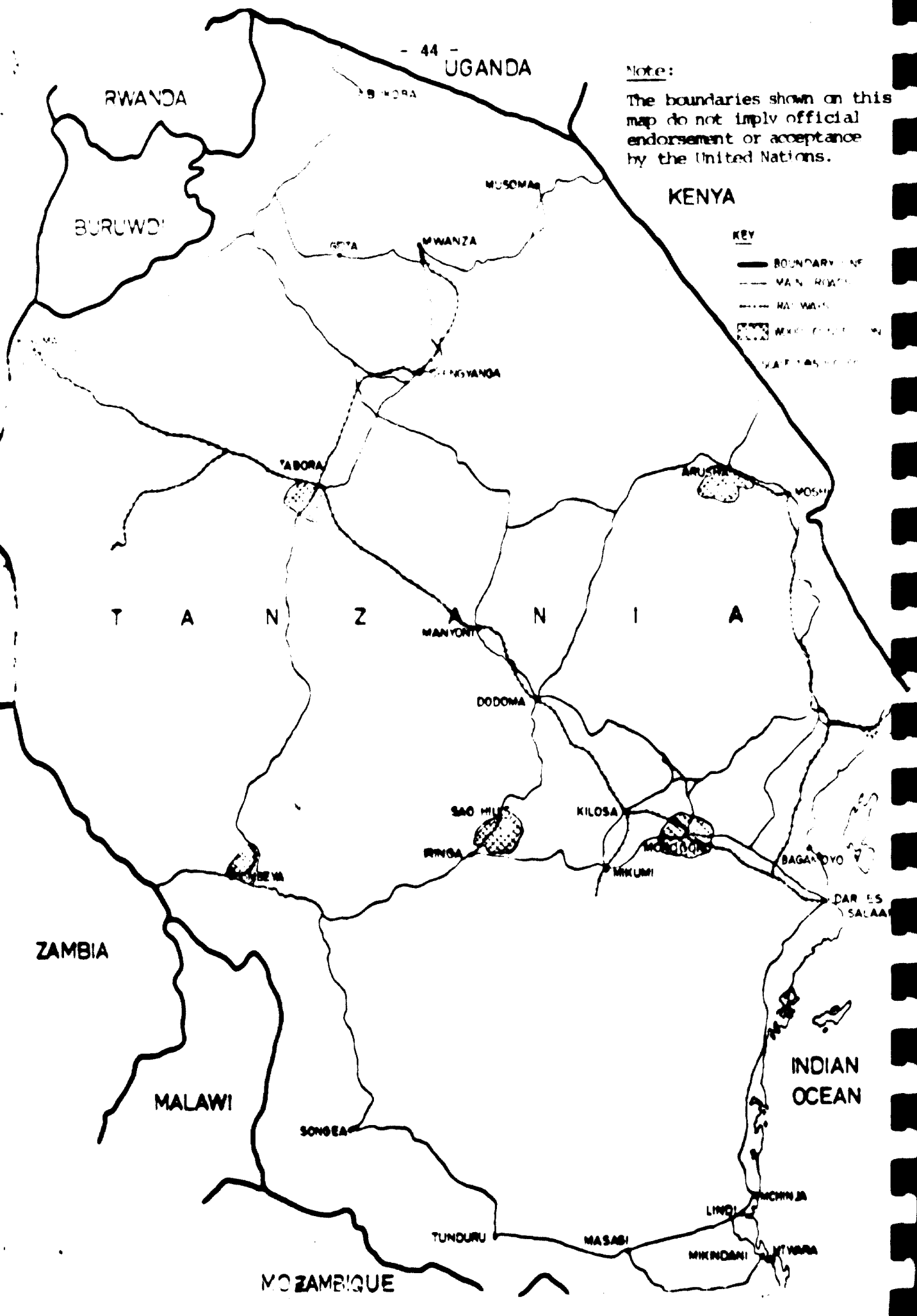
Logs delivered factory site cost about US\$35.- to US\$40.- and sawn timber ex-factory about US\$135.- but transportation only from Amsha to the harbour town of Tanga cost another US\$43.- and from areas like Tabora or Mbeya to Dar es Salaam will then cost

Note:  
The boundaries shown on this map do not imply official endorsement or acceptance by the United Nations.

KENYA

KEY

- BOUNDARY LINE
- - - MAIN ROAD
- · - · RAILWAY
- ▨ MARKET CENTER
- ▧ WATER RESERVOIR





about US\$80.-.

Administration and sales could be handled centrally from Dar es Salaam. Possibly not all the production would have to be established completely new since several existing sawmills, a chipboard factory and at least one plywood factory could be taken over by the new joint venture company.

#### Summary

For the reason of splitting the project into so many different production places it seems that this will mix the economy and competitiveness and, therefore the whole feasibility of setting up the complete project in Tanzania.

#### 3.2.5. Swaziland

3rd - 4th July 1975

#### U.N.D.P.

I was received by Mr. Greenidge, the Resident Representative of U.N.D.P. Mbabane, Swaziland. Unfortunately, Mr. Greenidge had only arranged meetings with government officials whereby no meetings with any private companies had been arranged which would have been essential, since all the timber is in the hands of private companies exclusively.

#### Ministry of Industry

I was received by the under-Secretary of the Ministry for Mines and Tourism, Mr. L. Sithebe. He confirmed to me that the government has no control about any forest in the country since all plantations are in the hands of private companies and natural forest is not existing. I was advised to see the Economic Planning

and Finance Division and the Forestry Department to collect more information. Mr. Sithebe was also kind enough to arrange a meeting with Mr. D.A. Crabtree and Mr. Wennington of Tonkwane Estates Limited, who I met on 4th July evening in Johannesburg.

Economic Planning and Finance Division

Here I met Miss Page who confirmed to me that the government has no control about any timber areas and does not intend to have such control in the near future. With investors, however, any time it could be considered to set up new plantations but these would only be good for logging operations after 15 to 20 years.

Ministry of Agriculture, Forestry Section

Here I met Mr. David Ormerod and Mr. Fritz Rosenorn-Lehn. Those two gentlemen have just completed a very detailed study about all the timber plantations and all operations on timber existing in Swaziland and I was promised that they will be sending one copy of their study to our Singapore address for my consideration which was received later.

Basically it is to be mentioned that there are two large timber plantations in the country. In the south this plantation is operated for a pulp and paper factory and they are over-cutting their limits, so that there is absolutely nothing available for exports as sawn timber. In the north, Peak Timber Limited (a subsidiary of Anglo-American Company) is operating about 24,000 ha with a timber stand of approximately 250 to 280 m<sup>3</sup>/ha. The annual output could reach a figure of 350,000 m<sup>3</sup>/year in log form, however, only 2/3 of it are presently utilized due to high logging costs and difficult logging operations. There was no meeting arranged with Messrs. Peak Timber Limited and it was not

possible to arrange one within the short period of time.

A further plantation is called Swaziland Plantation. They have 4,000 ha of forest land and they are cutting their timber very economically and are therefore selling all of it to South Africa. Any surplus is not available for our considerations.

The only possibility could be in connection with smaller area holders such as the Tonkwane Estates Limited, and for that reason the meeting in Johannesburg was arranged.

Tonkwane Estates Limited

In Johannesburg I met Mr. D.A. Crabtree and Mr. Wennington and I was told that out of their plantation about 10,000 m<sup>3</sup> of sawn softwood could be exported per year. There would be another smaller sawmill which owns approximately the same size of area of softwood plantations which would probably also be interested in a joint venture with Kuwait on the same quantity of export. Since even those two sources could not fulfil the complete requirement, Mr. Crabtree suggested, that he would like to discuss the matter with Messrs. Peak Timber on behalf of us and he would send me the results of all his discussions to Singapore for being taken into consideration in my report. Unfortunately those papers were not received.

3.2.6. United Republic of Cameroon

5th - 11th July 1975

U.N.D.P.

Here I was received by the Resident Representative Mr. Mufti, and by the Deputy Resident Representative Mr. Mathews. In charge of my mission was Mr. McGrath who guided me directly to the Forestry Project from where again I was guided to Mr. Tchomtchoua, the Administrateur Civil Principal Conseiller Technique of the Ministry for the Development of Industry and Commerce.

Ministry of the Development of the Industry and Commerce

Mr. Tchomtchoua arranged an extensive meeting with:

- Mr. El-Hadj Ahmed Khalifa Kotoko, Chief of the Service for Asian Affairs in the Foreign Ministry
- Mr. David Ebongue Sone, the Co-Director for Industry in the Ministry of the Development of the Industriel et Commerce
- Mr. Gustave Gamon Mbeng, the Director of Water and Forestry
- Mr. Makon Wehiong, the Co-Director of the Forest Project
- Mr. Lucien Ngoundo Black, Director of the National Investment Company.

In the joint meeting it was mentioned that the government would be very interested in a joint venture with Kuwait. Several general papers had been prepared already for the meeting.

Particularly two forest areas would be available for the Kuwait project. One is south of the Deng-Deng project which is situated in the middle of the southern part of the country and quite near to the national railway. However, the distance between the logging

area and Douala as harbour is quite long and will require high transportation costs. I was shown figures, whereby the logging costs in the forest are only approximately 20.-US\$/m<sup>3</sup> whereby the same logs will cost fob approximately 50.-US\$/m<sup>3</sup>.

There is another piece of land available which is north of Douala and is also situated near the railway which would make transportation costs considerably lower. Mr. Makon of the Forestry Project has promised to send studies and figures about these two areas to Singapore to be taken into my report. Unfortunately, these papers were not received. Only a few figures about log prices and transportation costs were sent.

Together with Mr. Mbeng and Mr. Makon also the Cameroun Ply-wood Corporation was visited in Mbalmayo and discussions were held with Mr. Mukuri-Maka Aron, the Assistant Manager. The company is also known under the name of COCAM. The production in 2-shifts is about 4,000 sheets of plywood 4' x 8' x 4 mm on mainly Italian machines. Besides the production of plywood also blockboard and flush doors are produced whereby a small sawmill cuts the necessary planks. The production is low due to unbalanced capacities of the single machines and some serious bottle necks in the production itself and could easily be doubled with very small investment only. But taking the standard of this plywood factory into consideration it is clearly to be understood, why Cameroon would be so very much interested in the Kuwait project, since this project would bring an industrial revolution to the country by its size and economical output which would be almost exclusively export orientated.

Also I met Mr. Lucien Ngoundo Black of the National Investment Company who explained to me that the Investment Company is fully owned by the government and usually operates in two ways:

1. On purely government joint ventures, the government will hold the first discussions and negotiations with the partner

until a general agreement is reached and signed. Then S.N.I. (The National Investment Company) will be called in for the implementation of the project on behalf of the government.

2. On strictly private business the S.N.I. will negotiate with the partner without the government and will reach agreements which, naturally, have to fulfil all government regulations. The S.N.I. will then act as a partner to the private joint venture partner and implement the project by itself.

At the end of the visit there was another joint meeting in the office of Mr. Tchomtchoua where a summary of all discussions was discussed. After that final meeting we were received by the Minister of Agriculture, Mr. Maikono Abdulays. The Minister expressed again that Cameroon would be extremely interested in this joint venture and he was hoping that this Kuwait mission was the beginning of a very fruitful and successful co-operation between the two countries in the future.

#### Second Visit to the United Republic of Cameroon

2nd - 4th October 1975

#### Director for Water and Forest

In the course of this second visit to Cameroon had the opportunity of discussing the requirement once again with the director for Water and Forest, Mr. Mbeng. He specified that altogether four areas could be considered immediately.

There are 2 areas in the East where the conditions are quite similar. For the comparison with other countries, therefore, only one of those areas was considered.

The size of the Eastern areas is about 60,000 ha each and one is located north of Belabo facing the National railway at its southern and eastern boundary while the other is located in the triangle between the Bertoua - Nanga Eboko and the Bertoua - Abong Mbang roads.

Timber stands of marketable species only are between 20 and 40 m<sup>3</sup>/ha and the species are quite mixed which means that the conditions would be good for an integrated timber complex since additionally presently non-marketable species could be used for core purposes.

The disadvantage of those areas is the distance to the harbours of Douala or Kribi which would be about 600 km by road or train. Generally it was considered that the production site could be located about half way between the forest and the harbour but in any case near to the densely populated areas.

In the south, the 3rd area is located south of the Kribi - Ebolowa road and has about 200,000 ha with a timber stand of 5-10 m<sup>3</sup> of marketable species per ha. There these species consist of all red woods. Additionally also non-marketable species are available. The distance to the harbour town of Kribi where also the production site could be set up is only about 80 - 90 km which would reduce the transportation costs considerably. But the area has been worked already before and, therefore, the timber stand is not so dense anymore. For this reason it was not considered for the comparison.

But the 4th area was compared with other countries' conditions since it has similar conditions as the 3rd area, however, it is located in the English speaking Western part of Cameroon and the area is state owned.

The size is 300,000 ha and it is situated south of Kumba. Commercial timber stand is below 10 m<sup>3</sup>/ha but the area is located in the densely populated part of the country which means labour force would be available but also a local market would exist and the distance to the harbours of Douala and Victoria is just about 60 km. Timber species available are all mixed.

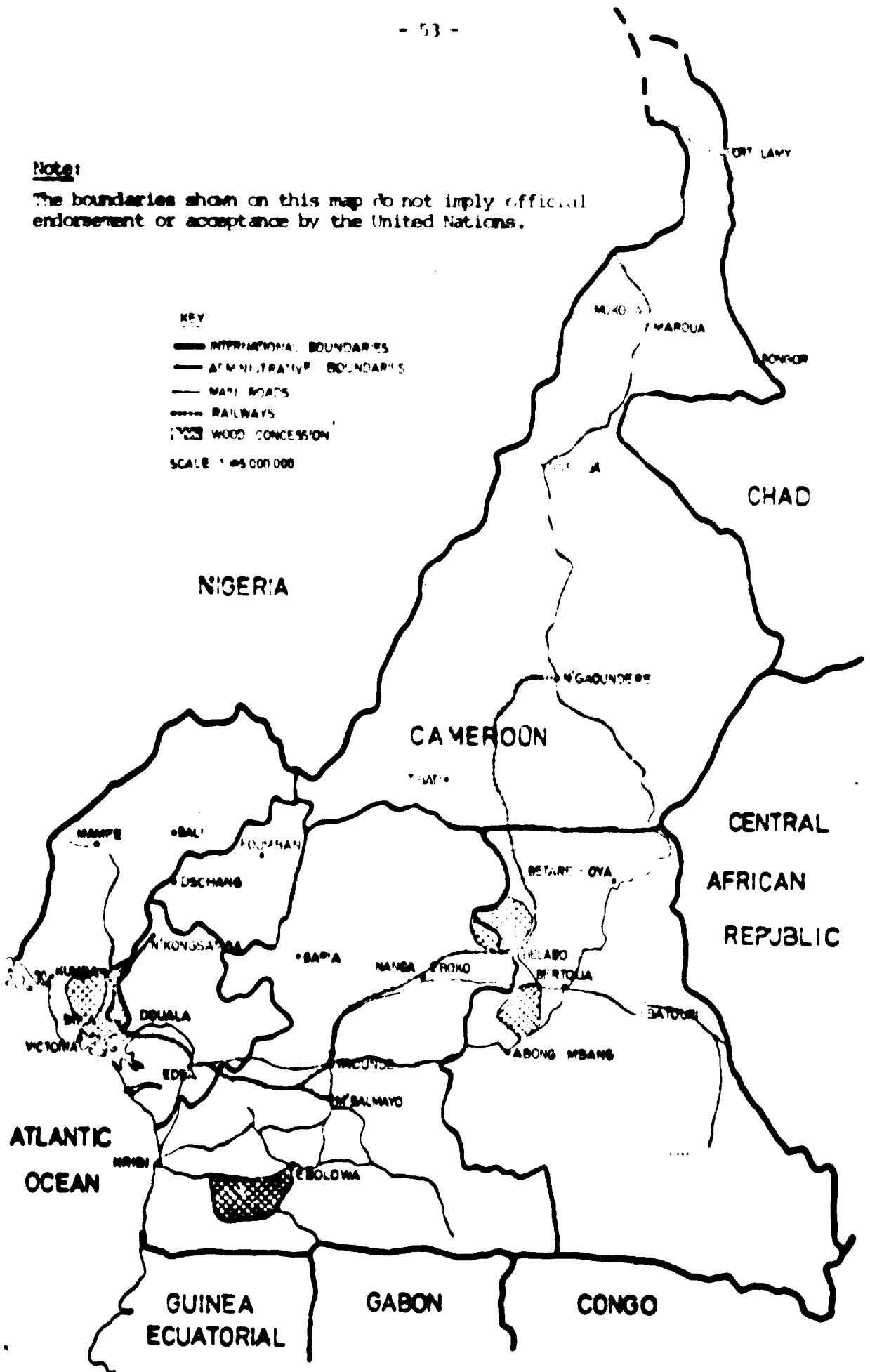
Mr. Mbeng expressed again the country's great interest in this joint venture project with the State of Kuwait.



Note:

The boundaries shown on this map do not imply official endorsement or acceptance by the United Nations.

KEY  
—— INTERNATIONAL BOUNDARIES  
—— ADMINISTRATIVE BOUNDARIES  
—— MAIN ROADS  
—— RAILWAYS  
▨ WOOD CONCESSION  
SCALE 1:45 000 000



3.2.7. Nigeria

11th - 13th July 1975

U.N.D.P.

At U.N.D.P. I met Mr. Lavides, who is the UNIDO representative at the U.N.D.P. and Senior Industrial Development Field Advisor. Mr. Lavides told us that practically all forest is given out to concessionaires and those concessionaires are rarely interested in joint ventures, since capital is available in Nigeria and not needed to be brought into the country.

Ministry of Industry

Mr. El-Mazidi met the Assistant Minister of Industry and was told that there is no serious interest by the government of Nigeria for such a joint venture project with the government of Kuwait, since no concession is available any more and the present concessions are operated already.

3.2.8. Ivory Coast

14th - 16th July 1975

U.N.D.P.

At U.N.D.P. we met first Miss Mayton who gave us a very clear briefing about the situation in the country and guided us straight away to the right persons in the government.

Later on we also met Mr. Petitpierre, the Resident Representative of U.N.D.P. in the Ivory Coast. Mr. Petitpierre told us that the concessions in the Ivory Coast have all been given out and most of them are not only operated but over-exploited

which means, that there is not too much potential left in the country for a project of that size.

In the U.N.D.P. office in the Ivory Coast we also found the unique case, that after receiving of the cable of Mr. Babic of UNIDO, Miss Meyton had written to the Ministry of Foreign Affairs about our mission and had given copies of this letter to the Woodworking Federation, the Chamber of Commerce, The Bureau for Industrial Development and to the Center for Export Trade in the Ivory Coast. Therefore, all those offices were expecting our mission and have been prepared to meet us and to discuss the matter with us.

#### Center for Export Trade in the Ivory Coast

In this office we were received by the Director, Mr. Amon-Tanoh, and we also met Mr. Ketoure, Mr. Die-Kacou and Mr. Philippot. Mainly Mr. Ketoure guided us to all the other meetings also. In this office we learned that the government is usually not partner in such projects, but if the Government of Kuwait would insist that would also be possible.

The government of the Ivory Coast favours such projects by any means and incentives are available many-fold. It was mentioned also that one of the advantages of the Ivory Coast is, that skilled labour is available near the industrial centers.

#### Bureau for the Development of the Industry

In this office we met with the Director General, Mr. Kouman, who mentioned that mainly two possibilities would be available for the project

1. To go into joint venture, including having a forest concessionaire as partner for the joint venture, and

2. To bring investment into the country without participating in the concession but, with a guarantee by the government for steady log supply.

We expressed to Mr. Kouman that the Government of Kuwait would mainly be interested in a joint venture, including the concession.

#### Ministry for Water and Forest

We were received by the Minister for Water and Forest, Mr. Nanlo Bamba, who told us very frankly that all concessions are given out to concessionaires and no piece of land is left. He also told us that all concessions have been worked already and there is no piece of virgin forest in the Ivory Coast available anymore. However, he expressed that the Government of the Ivory Coast would be extremely interested in this joint venture with the Government of Kuwait and would help by all means to find either private concessionaires who would be willing to enter into such a kind of joint venture or, to secure log supply for the next 20 years from such private concessionaires to such a joint venture project.

#### Ministry of Commerce

In this Ministry we were received by the Minister of Commerce, Mr. Maurice Seri-Gnoleba. The Minister expressed his great welcome to the delegation from Kuwait and mentioned that the Government of the Ivory Coast would be very glad if this kind of joint venture would be realized. All help from the government could be expected and many incentives would be available.

#### Co-operative of Concession Owners

We met Mr. Kouame-Assane, who is a Member of Parliament

and also the President of the Co-operative of Concession Owners. He represents about 110 timber concession owners with a total area of 500,000 ha. Unfortunately, this area is spread over the whole country and can therefore only partly be considered for our project.

The fact of this concession owners is, that they have not enough money to buy equipment and there is also no market for their logs now which means, they are really looking for partners to provide them with equipment, know how, finance and market. Presently those concession owners are selling their logs to French companies which are exporting those logs to France, but the prices are very low.

Most of the concessions are given to the concession owners for a period of 5 years but the concession agreement is renewable.

The co-operative has a Board of Directors of 15 persons out of which the President and three Vice Presidents together with a Treasurer are basically managing the co-operative.

The Co-operative would be very interested in a joint venture with the Kuwait Government and would not obligately ask for an equity of 51% in the joint venture but would probably expect so.

Further details will be sent to me in Singapore about the basic facts of the Co-operative by Mr. Kouame-Assane. Unfortunately no letter or papers were received.

Bureau for the Assistance for the Development of the Industry

In this office we met Mr. Stefan F.A. Liebaert, who is the Chief Consultant to this office and plays a very important role in the country. He was the one who had arranged the meeting

with the Minister of Commerce whereas the meeting with the Minister for Water and Forest was organized by Mr. Ketoure).

Mr. Liebaert was explaining the situation in the country in that way, that most of the forest concessions are in fact operated but that there is still a certain potential available for this joint venture project. In fact he considers, that about 30 concession holders with concessions near the port of St. Pedro are interested to join together as partners for a joint venture project which would include the logging concession as well as the production into sawn timber, plywood etc. Those 30 concession holders are having a total area of about 75,000 ha with a timber stand of approximately 40 - 50 m<sup>3</sup>/ha (other sources were talking of about 10 to max. 20 m<sup>3</sup>/ha only) of exploitable species which means, that a total timber stand of 3 to 4 Million m<sup>3</sup> would be available. This again would make it possible to have a log input of 150,000 to 200,000 m<sup>3</sup>/year for our project. However, this includes also non-commercial species.

Mr. Liebaert is of the opinion that the costs in the forest, loaded truck, vary between 3,500 and 4,500 F CFA (8.- to 23.- US\$/m<sup>3</sup>) and that the freight costs would be approximately 30 F CFA 0.15 US\$ per km which means, that over a distance of 200 km another 6,000 F CFA 30.- US\$/m<sup>3</sup> would have to be considered.

#### Summary

The summary impression in the Ivory Coast was that the government would be very interested in the joint venture. However, the only real area of interest would be the one north of St. Pedro, whereby 30 concessionaires will have to come into the joint venture as partners. However for this reason and for the reason of the higher logging costs the conditions in the Ivory Coast have been found as not favourable for this project.

3.2.9. Liberia

16th - 20th July 1975

U.N.D.P.

In U.N.D.P. we were received by the Resident Representative, Mr. Bam, and by the Deputy Resident Representative, Mr. Donald T. Doherty. We were told that forest is available in Liberia and we were sent to the right contacts in the government from where onwards we approached successfully the Ministries in charge of our project.

Ministry of Finance

We were received by the Minister of Finance, Mr. Edwin J. Williams and by Mr. J. Togbakollie Woods. We were told that the Government of Liberia is extremely interested in this joint venture with the Government of Kuwait and that all assistance would be available for this project.

We also met Mr. Emil Jones of the Forestry Section of the Concessions Secretariat. Mr. Jones has given us most valuable information by telling us that the western part of the country has not only very poor forests with probably not more than 2 m<sup>3</sup>/ha of timber stand density but also there is no infrastructure available. On the other side the central and eastern part of Liberia has rich forests of primary and secondary species whereby the central part has this forest only in the north, whereby the eastern part of the country has this forest in the north and along the border line to the Ivory Coast down to the coast itself. Mr. Jones has also given us some figures which are important for the realistic consideration of the possibilities because compared to the total requirement in round log input for the project of approximately 170,000 m<sup>3</sup>/year

it must be known, that the total production of logs in 1974 was 300,081 m<sup>3</sup> in Liberia and 487,000 m<sup>3</sup> in 1973. If the figures of 1973 probably represent the total capacity in the present time it must be mentioned, that our project would then increase the total log production in Liberia by about 40%.

The same comparison must be made in connection with the area available. The total land area of Liberia is about 24 Million acres. Out of this the closed forest area is about 12 Million acres and the area with good and dense forest is about 5 Million acres only. In this area the timber stand varies somewhere between 2 - 4 m<sup>3</sup>/acre for the primary species and some 4 - 10 m<sup>3</sup>/acre for the primary and marketable secondary species altogether. Even if considering the highest value with 10 m<sup>3</sup>/acre it means that an area of 400 - 500,000 acres would be required as concession area to operate this area successfully for period of 20 years. This area again represents about 10% of the dense forest area in Liberia.

It was not directly recommended by Mr. Jones, however, as a result of those discussions it will have to be noted that further negotiations with the Government of Liberia or any private sector there, will have to consider very strongly and effectively the real timber stand in this area in connection with the marketability and the possibility to process such timbers into the products required in the Kuwait market.

The productions costs in Liberia are very similar to those at all the other countries in the West Coast which means, that the production costs in the forest are approximately 20.- to 25.- US\$/m<sup>3</sup> whereby the costs including all the transportation and FOB charges are coming up to somewhere between 32.- and 44.- US\$/m<sup>3</sup>.



Ministry of Planning

In this Ministry we met Mr. Lucacs and Mr. Engler.

Mr. Lucacs mainly emphasized that we would have to see the Ministry of Commerce and the Ministry of Finance besides his Ministry. About the possibilities in the country he gave us the following briefing:

There are three main concession holders. All three have already started some wood processing and would, therefore, not be substantial partners for our considerations. These are the companies SIGA, Vanply and P.P.P.

Mr. Lucacs also told us there are no written statements available about the official government policy in connection with the logging and exploitation of the forest, however, there is a standard Concession Agreement available which we should try to obtain. (At another office this Concession Agreement was received and it is added to this report as annex).

Mr. Lucacs further said, that no area is free any more in the country and all the areas are given out to concessionaires already. There might be, however, a possibility by getting one or more concession holders to join into this kind of joint venture with their concession.

It is the governments policy now to reduce log exports substantially and a new law is forcing any concession holder to turn approximately 20% of his log production into processing after the first year of operation and to increase processing and reduce selling of logs by always 20% in the following years to come which means, that after 5 years of operation of a concession 100% of the logs produced will be turned into processing and none sold as

logs. This law, however, shows the disadvantage that some of the concession holders are setting up very primitive sawmills and cutting most valuable trees into planks of very low quality just to fulfil the law.

As alternatives for the realization of this project, Mr. Lucacs mentioned that either a number of small concession holders should be found who might be willing to join into this project or, that one of the companies should be contacted holding a large concession but being not in a position to raise sufficient funds for such a project.

There is an Investment Incentive Code existing which requires that joint ventures have a minimum of 25% Liberian partnership.

Liberia, however, offers the best conditions regarding the forest on the whole West Coast, because there are still large areas of virgin forest available in Liberia which are not to be found in any other country at the West Coast any more.

A further advantage of Liberia for the setting up of this project there is that, practically no Foreign Exchange Control is existing.

This means, that imports and exports of foreign exchange are free, whereas in Cameroun and the Ivory Coast only imports and exports of French Francs are free, whereby other foreign currencies cannot be exported freely.

Mr. Lucacs also emphasized to draw our attention to the south-eastern part of the country where not only rich forest is available but also the best infrastructure.

Ministry of Commerce, Industry and Transportation

In this Ministry we were received by Deputy Minister, Mr. Richard M. Morris. We also met the Minister at a private party later.

Mr. Morris expressed that the Government of Liberia would be very glad about this joint venture with the Government of Kuwait and hopes that with this project further use of local timbers can be made. For this joint venture itself three realistic possibilities are available by either a joint venture between government and government or, a joint venture between government and a private company or a joint venture between private and private companies. However, there is a forth possibility available that Kuwait can also alone handle this project if she wants.

We also met Mr. L. Kwia Johnson, Jr., the Assistant Minister for Industry and his UNIDO Advisor, Mr. Jovanovich.

Ministry of Agriculture

In this Ministry we met Mr. Werner Frank, the Project Manager of the German Forestry Mission to Liberia, who has given us a very negative picture of the country's opportunities by telling us, that the good concessions are all taken away and nothing is available any more and even the larges concessions are jointly operated now with production companies, so that there is no more real room left for such a big project as the one from Kuwait.

We also met Mr. Pully, who has given us great assistance in providing us with a map of all concessions given out in Liberia and a list of the concession holders. From him we were also able to obtain a Standard Concession Agreement.

Summary

It can be said that in Liberia virgin forest is still obtainable, however, it will be necessary to negotiate very carefully and only on the basis of a serious forest survey report which must not be based on a too small area only but must really give a detailed outlook over the whole area of the concession in question.

2nd Visit to Liberia

28th September - 1st October 1975

In the course of this second visit to Liberia several companies holding concessions were approached to collect some realistic figures for the comparison as far as such figures are available altogether.

Lumber Business Corporation

This company belongs to Mr. Dia Houphouet-Boigny (the nephew of the President of the Ivory Coast) and Mr. Ketoure (also from the Ivory Coast). L.B.C. has agreements or options with several concession holders to exploit their forest concessions. These are:

Varian Logging Corporation

Their forest area is large but according the information we collected the timber stands and qualities must be poor. Therefore this area was not considered.

Lofa Lumber Corporation

This company has a concession very near to the coast line and not far away from the harbour town of Buchanan. Accessibility of this forest is very good because all along its southern border an asphalted road is going to Buchanan and along the eastern border a gravel road is also existing. The area is hilly but the forest seems not to cover the whole area which will bring the average timber stand figure down. The area covers approximately 50,000 ha and according to a very brief survey done by L.B.C. the timber stand for primary logs is about 16 m<sup>3</sup>/ha. Whether this means that 16 x 50,000 = 800,000 of primary species timber are available must be confirmed by a more intensive forest survey. According to the general information collected in Morovia another 8 - 900,000 m<sup>3</sup> of secondary species should be available for interior usage in the production. But since all this timber stand is still insufficient for our project it was considered to utilize it together with another area being not too far away.

Kraku - Bassa National Forest

Concessions for this large National Forest have been given to several companies and private persons. One of them is the Deputy Minister of Finance who is very interested in our project and in such a joint venture.

The forest was surveyed in 1964 by a German team and a survey report is available showing, unfortunately only figures of selected parts of the forest. The part for which the Deputy Minister has been given the concession was not surveyed but the neighbouring area which figures have been used. According to those figures about 17 m<sup>3</sup>/ha of commercial species and 47 m<sup>3</sup>/ha of useful secondary species could be available. However the forest survey report also indicates that prior to any serious con-

sideration a detailed forest survey of the specific area has to be undergone since sometimes even directly neighbouring areas have shown a totally different timber stand.

In total the timber stand in this part of the Kraku-Bassa forest would also not be sufficient for the project. However, the area is located not too far from the harbour town of Buchanan, too, and the idea was to combine both areas, the one of Lofa Logging Company and the one in the Kraku-Bassa forest into one joint venture with Kuwait for the production site to be set up somewhere outside of Buchanan. In the following tables this project was mentioned under "Liberia Centre" and it includes those both forest concessions.

This Kraku-Bassa area is just now not accessible but a new public roads is under construction and it was understood from the contractor that only about 30 km of road and one bridge are missing to reach the border of this area.

#### West Liberia Project

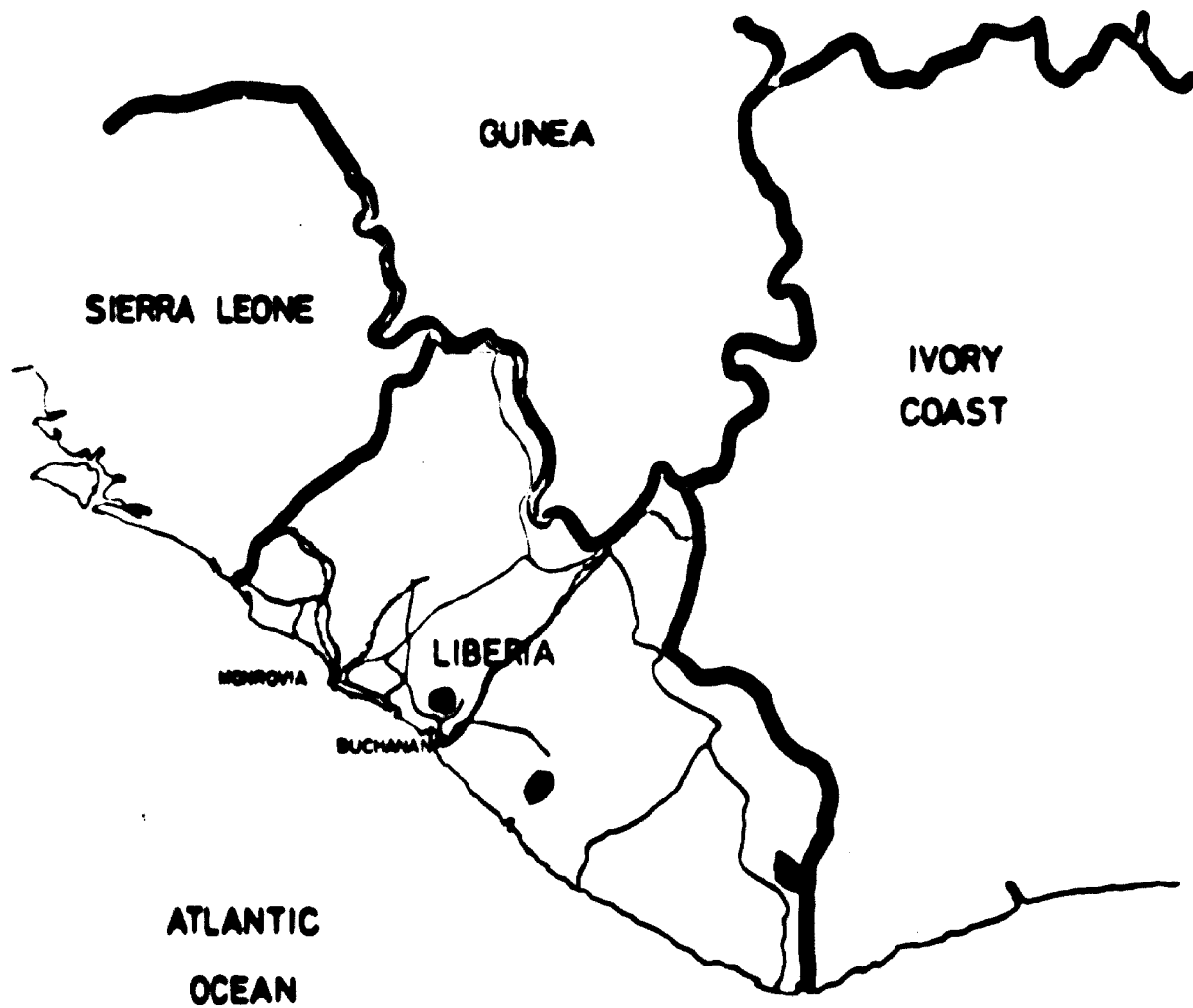
Lumber Business Corporation has several other options with concession holders in the east of Liberia along the border to the Ivory Coast. Unfortunately no reports about timber stands or species whatsoever are existing and all figures are based on assumptions of local experts which again are based on aerial surveys and views and on figures from neighbouring Ivory Coast forest.

Timber stands should be denser there and the forest is supposed to be closed compared to the scattered forests in the centre and in the west of Liberia and density figures range from 15 m<sup>3</sup>/ha for the commercial species to 22.5 m<sup>3</sup>/ha for the useful species.

There is one road existing which leads to the small harbour of Harper but shipments will likely have to be made from the Ivory Coast harbour of San Pedro.

Summary





The second visit to Liberia has shown that unused forest areas there are existing and it might be possible to utilize those areas mentioned before but it might also be possible to locate even better area for the hardwood project in the course of an intensive feasibility study in connection with the necessary forest survey.



**Note:**

The boundaries shown on this map do not imply official endorsement or acceptance by the United Nations.

**KEY:**

-  INTERNATIONAL BOUNDARIES
-  MAIN ROADS
-  RAILWAYS
-  WOOD CONCESSION

SCALE: 1:500000



3.2.10. Austria

7th October 1975

Since the United Republic of Tanzania, as well as the other countries along the East Coast of Africa, also does not provide very favourable conditions for the softwood project there seemed to be only one possibility left to assess the required raw material for Kuwait - by long term buying contracts in countries with large softwood resources.

Under this idea an existent integrated timber complex in Austria, Danubius GmbH, Rosenau, Oberoesterreich, was visited and the matter was discussed with the Managing Director Mr. Rubchich.

The result was that the quantity required can easily be supplied by Danubius respectively one of their associate companies.

But surprisingly another idea was also considered: Danubius operates an old plywood and blockboard factory which will have to be replaced soon. It also operates a new veneer factory which follows the latest technologies for veneer slicing. It has also a chipboard factory which needs the replacement of several machines.

Also Danubius has just started a joint venture with one of Austria's largest forest owners for the mass production of flush doors. This company also operates a fairly large but 10 years old sawmill.

Based on the forest potential the following could be considered:

Both companies could join together with Kuwait to:

- slightly renovate and increase the output of the existing sawmill to cater for Kuwait's demand in sawn softwood timber
- operate the new flush door factory for the local market in Austria but also for possible requirements in Kuwait
- modernise the existing chipboard factory with an annual output of 20,000 m<sup>3</sup>, partly for export to Kuwait and the majority for the local market in Austria, whereby this chipboard (particle board) factory will utilize part of the production waste
- set up Europe's latest and more modern plywood factory for the utilization of exclusively local softwood and hardwood timbers for the sharply growing European market for construction plywood.

The totally required capital which would partly come into the joint venture as equity and partly as loan would be in the range of 8.5 millions US\$. The expected total turnover of the above specified complex would range near 22.5 millions US\$. Kuwait could join in with somewhat 30 to 50% of the total share capital.

Finally, it was also stated by Mr. Rubchich that in case the joint venture with his group would not materialize similar conditions can easily be found with other Austrian companies and forest owners.

4. COMPARISON OF CONDITIONS AND RECOMMENDATIONS  
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The travel reports under paragraph 3 have clearly shown that any considerations of setting up the project in Kenya, Swaziland or Nigeria, would be completely unrealistic. This is the reason why those countries are not considered in the following comparison of conditions and recommendations.

Generally, it must also be mentioned at this stage that, even it is part of the job description and, also, it is included in the costs and profit comparison later on, it was never considered in the course of working out this report to set up the project in Kuwait and import the logs from overseas. This was mainly not done because there seems to be no country left in the whole world which allows or favours export of round logs. Even the governments of those countries presently still exporting large quantities of round logs such as Indonesia or some West African countries, have clearly stated during our visit that they are gradually and definitely reducing the rate of exports of round logs and they will insist within a few more years that no logs at all will be exported anymore.

Before going into the details of the comparison of the facts and findings, some interesting figures have been taken out of statistics and put together into table 2 and table 3.

Those tables show, for example, that the wood consumption per capita is very high in Malaysia compared to other countries which have been visited.

Table 2: Statistics

	MALAYSIA		INDONESIA	TANZANIA	CAMEROON	IVORY COAST	LIBERIA
	WEST	EAST					
Population (in Million)	9.9	1.0	128.5	13.6	5.986	5.0	1.6
Per Capita annual wood consumption	0.5 m3	1.4 m3	0.05 m3	0.05 m3			0.07 m3
Forest Resource	(1973)		(1974)	(1973)		(1973)	(1974)
plantations	2,181 ha		415,680 ha	36,832 ha		22,000 ha	2,509 ha
planted commercial forest area	606 ha		271 ha	4,220 ha		3,366 ha	933 ha
commercial forest volume (000 m3)	7,618,000 ha	9,700,000 ha	38,000,000 ha	13,000,000 ha	13,000,000ha*	2,100,000 ha	4,856,400 ha
	905,000	277,000					

Sources: FAO World Wood, July 25, 1975, Vol. 16, No. 8

\* according to informations from Cameroon

Table 3: Statistics

	MALAYSIA		INDONESIA	INDONESIA TIMOR	CAMBODIA	IVORY COAST	LIBERIA
	WEST	EAST					
<u>Production:</u>	1973	1973	1973	1973	1973	1974	1974
harvested	9,257,000 m3	3,315,000 m3	25,348,000 m3	1,172,000 m3	1,300,000 m3	4,475,000 m3	245,661 m3
sawn timber	3,596,000 m3	609,000 m3	1,348,750 m3	191,000 m3	170,000 m3	1,500,000 m3	160,249 m3
veneer	77,600,000 m3	4,000 m3	-	-	30,000 m3	42,700 m3	-
plywood	336,275 m3	307,000 m3	31,250 m3	8,000 m3	10,000 m3	11,727 m3	-
particle board	146,990 m3	-	-	4,000 m3	-	-	-
wood chips	-	-	-	-	-	-	-
<u>International Trade</u>							
Exports	3,908,000 m3	2,365,000 m3	19,488,000 m3	35,000 m3	825,000 m3	2,885,000 m3	166,950 m3
Imports	2,500 m3	180,000 m3	-	91,000 m3	1,000 m3	-	1.05 m3
<u>No. of:</u>							
sawmills	495	124	987	46	-	79	20
veneer mills	38	1	-	-	2	6	-
plywood mills	-	2	5	2	-	4	1
particle board	1	-	-	1	-	1	-
fibre board (hardboard)	-	-	1	1	-	-	-
woodchips	-	1	-	-	-	-	-

Sources: FAO World Wood, July 25, 1975, Vol. 16, No. 8

This will have to be considered in a feasibility study to be worked out later because a much higher percentage of requirements for the local market will have to be calculated. But also in fast developing countries, such as Indonesia or the Ivory Coast this will have to be considered because those countries may increase their per capita consumption of wood products in the very near future considerably.

Very interesting is also the comparison of the commercial forest area being available in those countries and showing that only West Malaysia, for example, with its very favourable cost and infrastructure conditions has almost four times as much forest area as the Ivory Coast, and more than 50% more than Liberia. Very interesting is also the comparison between the amounts of harvested logs per year in comparison with the commercial forest area. This comparison, for example, shows that logging and harvesting of the forest is still very undeveloped in countries such as East Malaysia, Tanzania, Cameroon and Liberia. These are also those countries being very interested to find joint venture partners for the utilization of their natural resources.

#### 4.1. Availability of Forest Concessions

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As already mentioned in the travel reports it might be briefly repeated here:

- West Malaysia:** new logging concessions are still available, joint venture partners for logging and processing are highly welcomed.
- East Malaysia:** new logging concessions are still available and joint venture partners are highly welcomed for joint venture logging and processing.

**Indonesia:**

practically all useful logging concessions are given away already. Foreign participation in the logging concession is not allowed only contracting can be done. Conflict of interests? Joint ventures in processing companies are still allowed but only with Indonesian majority and year by year reduced participation of the foreigner.

**Kenya:**

Logging concessions are not granted. Only licenses to cut certain timber species in certain areas. Not enough timber is existing in the country to supply sufficient raw material for this softwood project.

**United Republic  
of Tanzania:**

large parts of the timber area are still undeveloped. A joint venture company between Kuwait and Tanzania may be given large areas for own logging and the government's guarantee for regular and steady supply of sufficient raw material to a joint venture integrated timber complex. For such a project not only hardwoods but also the necessary softwoods would be provided by the government. However, there is neither a softwood plantation nor a hardwood forest big enough to allow for the required logging capacity of the whole project which means that the project will have to be split into several logging and production places spread over the whole country.

**Swaziland:**

All timber plantations are in private hands. The large companies are processing for the demand of the Republic of South Africa and the smaller companies do not have sufficient timber in their plantations to cover the demand for this softwood project.

United Republic  
of Cameroon:

Many good timber concessions are still available and not given out. Foreign participation in the logging concession and in a processing timber complex are highly welcomed by the government. There are altogether four areas available out of which one in the East and one in the West (the English speaking part of Cameroon) have been considered. Both areas provide sufficient logs for the hardwood project.

Nigeria:

Timber concessions are no more available. The government is not interested in foreign participation in the local timber industry.

Ivory Coast:

All logging concessions are given away already. An association of 30 concession holders would be interested to participate in the project.

Liberia:

All logging concessions are given away already but many of them are not operated yet. The government would favour foreign participation in Liberia by any means and joint ventures on government - government, government - private, or private - private basis would be possible. One or more concession holders could be the possible joint venture partners. There are two areas available in the centre part of Liberia and not far away from the harbour town of Buchanan which should (according to figures estimated by local experts) be providing sufficient logs for the hardwood complex. There is also one area in the East which would be smaller but of sufficient capacity.

Details are shown in table 4.



Table 4: Forest Concessions

Sources: Own findings

	MALAYSIA				INDONESIA	TANZANIA	CAMEROON		IVORY COAST	LIBERIA	
	WEST		DUNGUM				WEST	EAST		CENTRE	EAST
	NESTIN	yes	yes	yes							
Available	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Size (1,000 ha)	24	100	75	33- 1000		300	60	300	100	80	
Timber stands (m3/ha):											
a) commercial	68	63	36	60- 120		8	30		16	15	
b) utilizable	45					8	50		22	22	
c) total (1,000 m3)	2,700	6,300	2,700	2000-60000		4,800	4,800	6,000	3,800	3,000	
Felling cycle (years)	20	30	20	25		25	25	25	20	20	
Log available 1,000 (m3/year)	135	210	135	80- 2400		192	192	240	190	150	
Approx. distance (km)											
a) concession - factory	100	100			100	60	300	200	150	200	
b) factory - port	140	450(60)			200-600	0	300	0	0	100	
c) factory - local market	100	410			200-600	0-100	0-20	0-20	0-100	100	
Infrastructure:											
a) rail existing	yes	yes	no	no	yes	yes	yes	no	no	no	no
b) public roads existing	yes	yes	no	no	yes	yes	yes	yes	yes	yes	yes
c) rivers usable	no	yes	yes	yes	no	no	no	no	no	no	no
Joint venture, concession available	yes	yes	yes	no	no	yes	yes	no	yes	yes	yes
Log export allowed	no	no	Limited	yes	no	yes	yes	yes	Limited	Limited	Limited
Are concessions given for log exports only	no	no	no only with processing	no more	no	no	no only with processing	yes	yes only for five years	yes	yes

4.2. Sizes of Forest Concessions  
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All the details about the concession sizes and the timber stands, as far as informations could be collected are also shown in table 4.

4.3. Species  
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The question of species being available in the forest concessions has been carefully considered during the visits to the different countries. It must be stated that only those concessions have been considered in the report which have a fair amount of marketable and processable timber species. It was, however, not possible to collect complete information about timber stands in all countries, since forest surveys for many areas have not been done yet and timber stands for many areas have not been done yet and timber stands are either roughly guessed only or are taken from aerial surveys which are not precise enough. Important part of the feasibility study to be worked out will be, consequently, to undertake forest surveys wherever reliable survey reports are not available yet.

4.4. Logging Costs  
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As already mentioned in the travel reports, the logging costs and all the connected transportation costs have been given great attention. But since the location of logging areas, logging camps and factory sites are mostly uncertain yet most of the figures had to be fairly estimated. Table 5 shows a comparison of logging costs in the different countries. As far as it was possible to obtain figures those costs have been broken down. Also 2 summaries have been given for the costs of the logs delivered factory site and

"c & f Kuwait" supposing that those logs would be shipped to Kuwait and such shipments would be possible.

Sources: Own findings

Table 5: Assumption of Logging Costs (US\$/m<sup>3</sup>)

	MALAYSIA		INDONESIA	TANZANIA	CAMBODIA		IVORY COAST	LIBERIA	
	WEST	EAST			WEST	EAST		CENTRE	EAST
depreciation/interests									
labour costs			3.00						
overheads	7.30	12.00	3.30	25.00	22.00	22.00	22.00	20.00	20.00
royalties, taxes			9.50						
transport to production site	3.40	3.40	8.60	10.00	2.70	8.00	8.00-30.00	4.00	8.00
delivered prod. site	10.70	15.40	10.10	35.00	24.70	30.00	30.00-52.00	24.00	28.00
+ transport to port	3.40	7.30	-	37.00	-	8.00	-	-	8.00
+ frib costs	1.50	1.50	1.50	2.50	4.00	4.00	4.00	4.00	4.00
+ cdf costs	35.00	35.00	35.00	20.00	47.00	47.00	47.00	47.00	47.00
delivered cdf Permit	50.60	59.20	71.00	93.50	75.70	89.00	81.00-103.00	75.00	87.00

In such countries where the projected factory site would be situated at or near the harbour town no freight costs between the factory and the port are shown, therefore.

4.5. Transportation and Infrastructure

As already mentioned in the travel reports, the following conditions have been found in the various countries:

**West Malaysia:** Infrastructure in West Malaysia is excellent as road and rail connections are existing. For the Nestin project, roads into the forest will even be very short, whereby the Dungan project in West Malaysia will require some road building into the forest.

**East Malaysia:** Infrastructure in the forest area is practically not existing yet, however, rivers may be used for floating the logs to the factory site. However, the forest contains a certain quantity of sinker logs which cannot be rafted and those logs will have to be brought to the factory site by barges and tug boats. The same way of transportation will be necessary for the final products if the factory site is not situated very near to a harbour site. Trans-shipment to Singapore must be considered.

**Indonesia:** Also in most parts of Indonesian forests, infrastructure is practically not existing. However, rivers can be used for rafting of the logs to the factory site or for bringing them there by barges and tug boats.

**United Republic  
of Tanzania:**

Roads and railway are existing in East Africa, however, it will be necessary to build certain

branch roads into the forest. However, it must be mentioned that transportation costs in East Africa are extremely high on the road as well as on the rail.

United Republic  
of Cameroon:

The two concession areas being considered in this report are both situated nearby the railway line. However, it must be considered that roads into the forest will have to be built and will represent quite a serious part of the logging costs. Rafting of the logs is mostly impossible because of water falls in the rivers.

Ivory Coast:

The concessions of the association of the 30 concession holders would be fairly close to one of the country's harbours which means that transportation costs could be kept fairly low but logging costs in general are very high in the Ivory Coast.

Liberia:

The concession areas being considered in the centre are both situated near the harbour town of Buchanan and roads are partly existing and partly under construction.

The concession considered in the East is also situated near an existing road but shipment will have to be done, most likely, through the western port of St. Pedro in the Ivory Coast.

#### 4.6. Production Costs

Because of the fact that in most of the countries visited feasibility reports of new projects are not existing yet, it was impossible to collect sufficient data for working out the production costs in the different countries. However, it was possible to collect unit costs for several calculation items in different countries.

For Malaysia and Indonesia also detailed feasibility studies have been available for similar Integrated Timber Complexes.

Since the projected integrated Timber Complex comprises very similar production lines and capacities too, it was possible to develop unit calculations for sawn timber and plywood by comparing unit costs. Not available figures have partly been assumed and partly been taken in simple relation to the conditions in the compared countries. Log costs have been taken from table 5 and the high recovery figure for integrated operation and almost complete utilization has been used. Thus the following calculations in tables 6 and 7 are more considered for comparison purposes rather than for actual usage of the absolute figures.

Here it must also be stated that from experience it is known that production costs in Africa are generally higher than in South East Asia and factories in Africa can only survive in the world competition since the market in Europe and U.K. allows for higher prices than the other world market, particularly the market in Japan and the United States of America. This will have to be clearly considered in a future feasibility study.

#### 4.7. Markets -----

It is understood that the products being manufactured in the integrated timber complex will be available for re-processing in Kuwait. Since Kuwait, however, is a free country and the local existing industry cannot really be forced by law to buy exclusively from the joint venture timber complex, it will be essential that the planning of this timber complex will be made in a way to allow sales to any other part in the world if the Kuwait market is not or not yet prepared to absorb that production of the joint venture complex. The comparison between the estimated fob costs and the

Sources: Own findings

Table 6: Assumption of Production Costs (US\$/m3)  
Sawn Hardwood Timber

	KUALA	MALAYSIA			INDONESIA	TANZANIA	CAMEROON		IVORY COAST		LIBERIA	
		WEST		EAST			WEST	EAST	COAST	CENTRE	EAST	
		NESTIN	DUNGUN									
logs	116.70	17.60	25.30	32.90	56.70	77.80	40.60	49.40	80.00	39.50	46.10	
electricity	0.50	1.50	1.50	1.50	1.50		1.50	1.50	1.50	1.50	1.50	
fuel	0.20	1.10	1.10	1.30	0.40		1.10	1.30	1.30	1.10	1.10	
packing	2.60	2.60	2.60	2.60	2.60		2.60	2.60	2.60	2.60	2.60	
supplies	0.30	0.30	0.30	0.30	0.30		0.30	0.30	0.30	0.30	0.30	
transport	2.00	3.70	3.70	5.00	5.00	59.40	3.70	3.70	5.00	3.70	3.70	
Summary												
Variable costs	122.30	26.80	34.50	43.60	66.50		49.80	58.80	90.70	48.70	55.30	
Labour	26.90	14.10	14.10	21.20	7.00		7.00	7.00	21.00	7.00	7.00	
Overheads	2.00	1.80	1.80	1.80	3.30		1.80	1.80	3.30	1.80	1.80	
Depreciation/ Interests	16.80	11.60	11.60	11.60	17.30		8.60	8.60	11.60	8.60	8.60	
on-factory	168.00	54.30	62.00	78.20	94.10	137.20	67.20	76.20	126.60	66.10	72.70	
+ freight to port	-	3.40	7.30	-	-	37.00	-	8.00	-	-	8.00	
+ fob costs	-	1.50	1.50	1.50	1.50	2.50	4.00	4.00	4.00	4.00	4.00	
fob port	-	59.20	70.80	79.70	95.60	176.70	71.20	86.20	130.60	70.10	84.70	
+ freight Kumait	-	35.00	35.00	45.00	35.00	20.00	47.00	47.00	47.00	47.00	47.00	
caf Kumait	168.00	94.20	105.80	124.70	130.60	196.70	118.20	135.20	177.60	117.10	131.70	
present price in Kumait (Deriving from Malaysia)	200.00	-	-	-	-	-	-	-	-	-	-	
world market fob prices (1975)	-	110.00	110.00	115.00	110.00	212.00	170.00	170.00	170.00	170.00	170.00	



Table 7: Assumption of Production Costs (US\$/m<sup>3</sup>)  
Plywood

Sources: Own findings

	KUALA		MALAYSIA			INDONESIA	TANZANIA	CAMEROON		IVORY COAST	LIBERIA	
		WEST	DUNGIN	EAST	WEST			EAST	CENTRE		EAST	
logs	89.00	13.60	19.60	25.40	43.90	53.80	31.40	38.10	62.00	30.50	35.60	
glue	29.20	29.20	29.20	29.20	29.20	29.20	29.20	29.20	29.20	29.20	29.20	
electricity	1.70	5.10	5.10	5.10	5.10	5.10	5.10	5.10	5.10	5.10	5.10	
fuel	1.50	8.10	8.10	9.70	3.00	9.70	8.10	9.70	9.70	8.10	8.10	
packing	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	
supplies	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	
transport	2.10	3.80	3.80	5.20	5.20	5.20	3.80	3.80	5.20	3.80	3.80	
<b>Summary</b>												
Variable costs	127.60	63.90	69.90	78.70	90.50	107.10	81.70	90.00	115.30	80.80	85.90	
Labour	47.20	24.70	24.70	37.10	12.40	12.40	12.40	12.40	37.10	12.40	12.40	
Overheads	6.00	5.50	5.50	5.50	10.00	5.50	5.50	5.50	10.00	5.50	5.50	
Depreciation/ Interests	48.60	38.60	38.60	38.60	56.20	38.60	38.60	38.60	38.60	38.60	38.60	
ex-factory	229.40	132.70	138.70	159.90	169.10	163.60	138.20	146.50	201.00	137.30	142.40	
+ freight to port	-	3.40	7.30	-	-	37.00	-	8.00	-	-	8.00	
+ fob costs	-	1.50	1.50	1.50	1.50	2.50	4.00	4.00	4.00	4.00	4.00	
fob port	-	137.60	147.50	161.40	170.60	203.10	142.20	158.50	205.00	141.30	154.40	
+ freight Kuwait	-	35.00	35.00	45.00	35.00	20.00	47.00	47.00	47.00	47.00	47.00	
caf Kuwait	229.40	172.60	182.50	206.40	205.60	223.10	189.20	205.50	252.00	188.30	201.40	
price Kuwait 1973 (Meranti from Malaysia)	234.00	-	-	-	-	-	-	-	-	-	-	
world market fob prices (1975)	-	175.00	175.00	175.00	175.00	N.A.	270.00	270.00	270.00	270.00	270.00	

present world market fob prices demonstrate the profitability of the project to be expected.

Markets for the different productions lines would be as follows:

- Plywood:** There is a pricewise steady and quantity-wise slightly increasing plywood market in Europe and U.K. Prices in Europe and U.K. are fairly stable and not very much fluctuating.
- There is also a considerable plywood market existing in Japan which could be considered in case the project would be set up in Malaysia. The same is valid with regard to the huge plywood market in the United States of America. In both countries, Japan and the U.S.A., the fluctuation of the prices is very large and must be considered very carefully in a feasibility study.
- Sawn Timber:** Sawn timber can be sold anywhere in the world particularly if the prices are competitive. But based on the raw material costs mentioned in this report it should be possible to sell sawn timber always and continuously to many places in the world.
- Blockboard:** There is a steady market for blockboard existing mainly in U.K. which can be considered for the feasibility study in case this blockboard cannot be sold locally or in Kuwait.
- Flush Doors:** Flush doors can be sold in Kuwait but can always also be sold locally. All developing countries have a considerable construction programme and all these new buildings require doors which can be delivered from the timber complex at very competitive prices.

**Mouldings and  
Furniture  
Components:**

The machinery lines for mouldings and furniture components have been considered as secondary production for sawn timber for the market requirements in Kuwait. Observations have shown that it will be absolutely no problem to convince the buyers in Kuwait to purchase not only sawn timber but also some secondary products for their furniture productions, interior decoration and other purposes.

**Flooring:**

This products is also known as "Lamdecks" and the the market for this product is mainly in the United States and Canada. But there is also a market developing in Europe now. The product has been considered because low grade and unknown timber species can be used for this product and it, therefore, allows for a greater and better utilization of the resources. Lamdecks are produced and sold in few standards sizes of 1½" or 1¼" thickness, 1 ft. width and 20 ft., 40 ft. or 60 ft. length.

**Pre-fabricated  
Houses:**

The wood waste will be turned into wood cement slabs and those ones will be used for making pre-fabricated houses for which the market will be always locally in the country of the timber complex.

**4.8.        Summary and Recommendation**  
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The comparison of the different opportunities in the countries visited shows that there are three different grades of project opportunities such as:

4.8.1. Countries without opportunities

As already mentioned before there will be no opportunities for neither the joint venture logging concession nor a joint venture timber complex in Kenya, Swaziland and Nigeria.

4.8.2. Countries with opportunities under certain conditions

Also in East Malaysia timber is available in large quantities, however, the lack of infrastructure and of a good harbour may be the facts to be considered seriously.

Indonesia is providing very large logging areas, however, foreign participation in logging concessions is not allowed and foreign partnership in processing factories will have to be reduced gradually.

Tanzania seems to be the only country which would be able to provide softwood and hardwood timber resources to allow the complete project to be set up in one country only. However, it will be a great disadvantage to split the project into 8 logging and maybe, 4 - 5 production locations because the integration being obvious for a good economy of the project, can hardly be realized. Also the cost calculations show no favourable result.

Also the conditions generally in the Ivory Coast are excellent, the conditions for the project might not be very favourable, since all concessions are given out already and only contract logging can be considered similar as in Indonesia.

4.8.3. Recommended Countries for the Hardwood Complex

The following projects can be recommended due to quite favourable conditions which must, however, carefully be determined in a final feasibility study:

First priority: West Malaysia is offering two projects and both are providing conditions which can be recommended. It must, however, be stated that the Nestin Project offers the most favourable conditions.

Second priority: West Malaysia's second project Dungun must be recommended in case any reason is found to decide against the Nestin project.

Third priority: Liberia also provides very good conditions for setting up the integrated timber complex for the utilization of hardwood and joint venture would be highly welcomed.

Fourth priority: Good conditions are also available in Cameroun where logging concessions, labour and everything else required would be available for setting up the hardwood timber complex there.

#### 4.8.4. Softwood Complex

If the softwood complex will not be set up in Tanzania, it may have to be considered in Austria in Europe where the raw material can be provided easily in the required quantities and where joint venture partners for logging, saw milling and the chipboard production are existing.

5. INTEGRATED TIMBER COMPLEX  
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After it was realised during the visits to several countries that setting up the integrated timber complex in Kuwait would be rather unrealistic because continuous log supply to Kuwait can definitely not be ensured, and after the countries have been recommended which would provide favourable conditions for setting up such an integrated timber complex the project itself must now clearly be determined.

Before going into details it must be stated that Kuwait is a country with a free trade with few possibilities to force Kuwait buyers from where they must buy their products. For this reason it seemed to be logical that the project must be worked out in a way to fulfil two requirements at the same time:

- a) to supply the necessary quantities and qualities for the woodworking industry in Kuwait to secure the raw material supply to this industry and
- b) to manufacture those goods very competitively to be able to sell the products of the timber complex also to other markets in case the Kuwait market may not directly require them or, may - particularly in the beginning - stick to old suppliers' contacts.

And particularly under the consideration of the economy of this project the following determination of the project and all recommendations are based on the considerations that

- the forest which is supposed to be given to the joint venture company as logging concession must be utilized up to the very maximum, which means that not only large diameter logs and well known and well marketable timber species might be cut but also

slightly smaller diameters and particularly many unknown species.

- all timber which is brought into the timber complex in the form of round logs must be processed in primary and secondary production lines, to get the highest possible added value.
- the timber being brought into the factory complex must be utilized as far as possible, and even the waste from the production must be used as fuel for the generation of necessary steam and/or must be recycled for other products provided, they can be sold in the market, to ensure that such a project is operating without any surplus waste.

Considering also the assumption that it would be difficult to convince the Kuwait buyers to purchase no softwood anymore in the future but only tropical hardwoods, the project was split into a softwood part and into a tropical hardwood part. Fortunately, several countries are recommendable for setting up the hardwood timber complex on their soil in connection with a necessary logging concession but, unfortunately, there seems to be only one solution left to establish the softwood project.

Since, however, both integrated timber complex project will not exclusively deliver their products to Kuwait only, it is important to review the experience in other countries and projects.

#### 5.1. Trends in Timber Processing Industries

After the second World War it was the fact that processing of timber was mainly done in the industrialized countries and based on their own forest resources. Only the increasing demand forced the industrialized countries to import round logs from other areas and from mainly tropical countries.

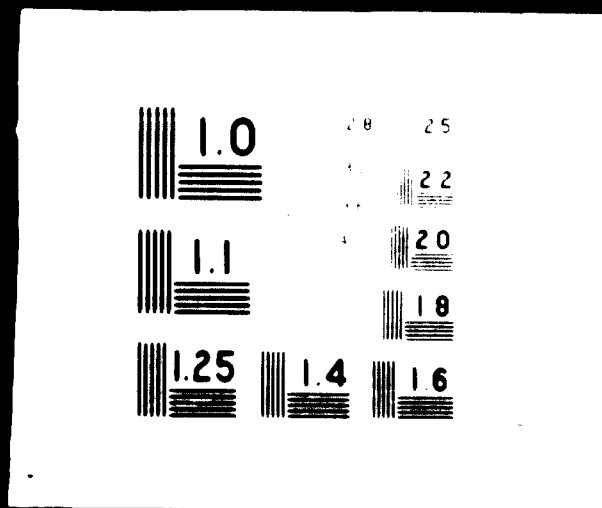


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In the course of development, the production costs in the industrialized countries rose too high and more and more industries were closed down in America, Japan and Europe to import the products from newly established industries in developing countries with own raw material resources.

This trend was clearly to be seen from the United States, Japan and later, the Philippines and South East Asia, and in Europe and the African countries. The same tendency is, for example, also on the way now in Brazil where the production is more and more shifted from the highly industrialized areas around Sao Paulo and Curitiba to the north along the Amazonas river, where the dense tropical forest is situated.

Producing sawn timber and plywood in developing countries was a very profitable business for quite a number of years due to the large margin left between the market price and the production costs. However, in the meantime costs have also substantially increased in developing countries and the latest trends are, therefore, away from single production line factories, into the direction of large integrated timber complexes. In such a timber complex it is possible

- to utilize the forest in a much better way because certain products allow for the utilization of unknown or low grade timber species, whereby the high quality material can be used for surface purposes.
- such integrated timber complexes provide also for the possibility to integrate several production lines in a way that products of one production line may be partly used as raw material in another production line. The vertical and horizontal integration of primary and secondary production lines allows for a very high utilization of the timber and the largest possible added value on the products.

- such large complexes allow also for a realistic and economic recycling and utilization of the waste representing the most important problem in the timber industry now.

Under present conditions it must be stated that it is obligatory to plan an integrated timber complex instead of single production lines. Such an integrated complex includes also certain production lines which provide not only for export goods but, which cover the local market in the country itself.

## 5.2. Proposal for the Tropical Hardwood Project -----

### 5.2.1. List of Products and Capacities

Kiln dried sawn timber	30,000 m3/year
Plywood	20,000 m3/year
Blockboard	8,960 m3/year
Flush doors	87,600 doors/year
Truck flooring	9,440 m3/year
Pre-fabricated Houses	3,600 houses/year

These capacities have been chosen to make full and balanced use of the key machines of each production line.

### 5.2.2. Material Requirements

The total material requirements have been carefully calculated. Important is to understand that basic figures are not always realistic for a real production, but, must be considered according to the actual requirements. The figures mentioned in the job description are the quantities which are required in Kuwait. For a proper production planning it must also be considered that an average woodworking industry will not achieve every day the full production capacity due to various circumstances. It is an experience that over a full year's time approximately 80% ratio of the nominal production capacity can be reached.

The original figures must, therefore, be increased to find out the nominal capacity first. But even these nominal capacities are still not the final figures because only 80% are good for exports and about 20% must be considered for the local market. Therefore, and to determine the real log input required and the capacities of the single production lines, the following calculation had to be made.

Tropical Timber Log Input

Kuwait demands:

Sawn timber                      30,000 m<sup>3</sup>/yr : 0.6 recovery = 50,000 m<sup>3</sup>/yr log input  
Plywood                            20,000 m<sup>3</sup>/yr : 0.5 recovery = 40,000 m<sup>3</sup>/yr log input

Additional production lines for integration: (rounded figures)

blockboard            timber    10,610 m<sup>3</sup>/yr : 0.6 recovery = 17,700 m<sup>3</sup>/yr log input  
                          veneer    2,330 m<sup>3</sup>/yr : 0.65recovery = 3,600 m<sup>3</sup>/yr log input  
flush doors           timber    1,300 m<sup>3</sup>/yr : 0.6 recovery = 2,200 m<sup>3</sup>/yr log input  
                          plywood 1,300 m<sup>3</sup>/yr : 0.5 recovery = 2,700 m<sup>3</sup>/yr log input

mouldings and furniture components    no additional requirement since secondary production and timber imports in Kuwait will be reduced instead.

truck flooring        timber    14,160 m<sup>3</sup>/yr : 0.6 recovery = 23,800 m<sup>3</sup>/yr log input

pre-fabricated houses    no additional requirements.

total log input per year at 80% production ratio for exports only

140,000 m<sup>3</sup>/yr

Log input calculation (rounded figures)

	<u>EXPORT 80%</u>	<u>LOCAL MARKET 20*</u>	<u>TOTAL 100%</u>
<b>Total log input for <u>sawmill</u></b>			
- timber production	50,000 m3	12,500 m3	62,500 m3
- blockboard	17,700 m3	4,400 m3	22,100 m3
- flush doors	2,200 m3	500 m3	2,700 m3
- truck flooring	23,800 m3	5,900 m3	29,700 m3
	<u>93,700 m3</u>	<u>23,300 m3</u>	<u>117,000 m3</u>
<b>Total log input for <u>plywood</u></b>			
- plywood production	40,000 m3	10,000 m3	50,000 m3
- veneer for blockboard	3,600 m3	900 m3	4,500 m3
- plywood for flush doors	2,700 m3	800 m3	3,500 m3
	<u>46,300 m3</u>	<u>11,700 m3</u>	<u>58,000 m3</u>
	<u>140,000 m3</u>	<u>35,000 m3</u>	<u>175,000 m3</u>

However, since normally only about 80% production ratio can be achieved the nominal log input figures will be:

<u>LOG INPUT PER YEAR</u>	<u>EFFECTIVE AT 80% PRODUCTION RATIO</u>	<u>NOMINAL AT 100% PRODUCTION CAPACITY</u>
Sawmill	117,000 m3	140,000 m3
Plywood	58,000 m3	71,000 m3
	<u>175,000 m3</u>	<u>211,000 m3</u>

Total log input nominal at 100% production ratio 211,000 m3/year

Total log input in fact (based on 80% production ratio) = 170,000 m3/year  
=====

5.2.3. Balancing of Production Capacities

It is necessary to calculate each single production line

in respect of the material being required to produce the before mentioned quantities of products.

Such a calculation also includes the balancing of the capacities of the main machines to be used to make sure that those machines will be sufficient in numbers and sizes to ensure the output. But the balancing must also provide for an even capacity to avoid any surplus output which could not be used.

Sawmill (on 100% production capacity)

140,000 m3/year	:	300 days	=	467.0 m3/day	
log input	=	100%	=	467.0 m3/day	
+ peeler cores	=	100%	=	19.0 m3/day	from plywood
= total input	=	100%	=	486.0 m3/day	
./. wet saw dust	=	12%	=	58.3 m3/day	
./. wet waste	=	22%	=	106.9 m3/day	
= wet lumber	=	66%	=	320.8 m3/day	
./. shrinkage	=	3%	=	14.6 m3/day	
= air dried lumber	=	63%	=	306.2 m3/day	
./. air dried lumber	=	63%	=	22.8 m3/day	for pre-fab. houses
= air dried lumber	=	63%	=	283.4 m3/day	
./. shrinkage	=	3%	=	13.5 m3/day	
= kiln dried lumber	=	60%	=	269.9 m3/day	
./. kiln dried lumber	=	60%	=	44.2 m3/day	for blockboard
./. kiln dried lumber	=	60%	=	5.4 m3/day	for flush doors
./. kiln dried lumber	=	60%	=	59.0 m3/day	for processing
= kiln dried lumber	=	60%	=	161.3 m3/day	for sale
=====					

This means that 161.3 m3/day x 0.8 (80% production ratio)  
= 129.1 m3/day x 300 days = 38,710 m3/year will be produced for

sale out of which about 22.5% will be for local sale and about 30,000 m3/year for export to Kuwait.

For production in 3 working shifts the following main machines will be required:

- 3 band sawmills as break-down saws or 6 horizontal gang saws
- 6 re-saws
- 12 table band saws
- 3 double edger
- 12 cross cut saws

This is the layout and equipment of a typical Asian sawmill and there is no reason why this would not be applicable to African conditions.

For the kiln drying of 283.4 m3/day at an (average) drying time of 6 days a kiln capacity of 1,700 m3 will be required or 22 kilns with a loading capacity of approximately 80 m3 each.

Plywood (on 100% production capacity)

71,000 m3/year	:	300 days	=	237.0 m3/day	
log input	=	100%	=	237.0 m3/day	
./.	wet waste	=	12%	=	28.4 m3/day
./.	peeler core	=	8%	=	19.0 m3/day
					for sawmill
=	wet veneer	=	80%	=	189.6 m3/day
./.	shrinkage	=	8%	=	19.0 m3/day
=	dry veneer	=	72%	=	170.6 m3/day
./.	dry waste	=	7%	=	16.6 m3/day
=	spliced veneer	=	65%	=	154.0 m3/day
./.	veneer	=	65%	=	9.7 m3/day
					for blockboard
=	spliced veneer	=	65%	=	144.3 m3/day
./.	loss for pressing	=	1%	=	2.2 m3/day
=	pressed plywood	=	64%	=	142.1 m3/day
./.	dry waste	=	7%	=	15.6 m3/day
					for flush doors
./.	sanding dust	=	6%	=	13.3 m3/day
./.	rejected plywood	=	1%	=	2.2 m3/day
=	plywood	=	50%	=	111.0 m3/day
./.	doors skins	=	50%	=	5.5 m3/day
					for flush doors
=	plywood	=	50%	=	105.5 m3/day
					for sale
.....					

This means that  $105.5 \text{ m}^3/\text{day} \times 0.8$  (80% production ratio)  
=  $84.4 \text{ m}^3/\text{day} \times 300 \text{ days} = 25,320 \text{ m}^3/\text{year}$  will be produced for  
sale, out of which about 21% will be for local sale and about  
20,000  $\text{m}^3/\text{year}$  for export to Kuwait.

The full output would be 50% of the log input of  $237 \text{ m}^3/\text{day}$   
=  $118.5 \text{ m}^3/\text{day} : 1.22 \text{ m} : 2.44 \text{ m} : 0.004 \text{ m}$  (4' x 8' x 4 mm sheets)  
= almost 10,000 sheets per day. For production on 3 working shifts  
the requirement of main machines will be:

- 1 x lathe 4'
- 1 x lathe 5'
- 2 x dryers
- 1 x 25 - opening hot press
- 1 x 15 - opening hot press
- 1 x trimming and sanding line

The plywood thickness of 4 mm represents only the  
standard for the calculation of the capacity. All range of  
sizes and thicknesses up to 4' x 8' x 25 mm can be obtained to  
fulfill the requirements of the Kuwait market.



Blockboard (on 100% production capacity)

The decisive machine for the capacity of a lumber core production is the lumber core composer. Such a machine with a working width of 17 ft. will produce 2 sheets at a time and experience has shown that a capacity of 90 sq. m. or roughly 30 sheets per hour is realistic which would mean a practical output in the range of 660 sheets per 22 hours per day.

Again calculations have been made to learn about the material flow. Since 2 kinds of material are involved (veneer from the peeling line of the plywood factory and lumber core being made out of lumber from sawmill), the following calculations and balancing have been broken down.

Veneer

A capacity calculation for this veneer must not be made since all the required capacities have already been considered in the plywood section of this paragraph.

The quantity of veneer is required with:

$$\begin{aligned} & 660 \text{ sheets/day} \times 1.32 \text{ m} \times 2.54 \text{ m} \times 0.0022 \text{ m} \times 2 \text{ layers} \\ = & 9.7 \text{ m}^3/\text{day} = 63\% = \text{spliced veneer} \\ & \text{-----} \end{aligned}$$

This will be veneer which has been peeled and dried before and which was joined and spliced before coming to this section of the production. The recovery at this stage will be 63%.

Lumber Core

The total volume of lumber core will be required with:

660 sheets/day x 1.32 x 2.54 m x 0.015 m = 33.2 m<sup>3</sup>/day

Kiln Dried Lumber	=	60 %	=	44.2 m <sup>3</sup> /day
./.	dry waste	=	7 %	= 5.1 m <sup>3</sup> /day
./.	dry saw dust	=	5 %	= 3.7 m <sup>3</sup> /day
./.	dry shavings	=	3 %	= 2.2 m <sup>3</sup> /day
<hr/>				
=	lumber core	=	45 %	= 33.2 m <sup>3</sup> /day
=====				

This material is coming from the sawmill and is produced from logs and peeler cores.

Blockboard Production

It is not necessary to have much balancing on the lumber core production line itself since veneer is full size and lumber core of the same size will be laid up and pressed in one of the pressing lines of the plywood factory. Capacity at the glue spreader, cold and hot presses, trim saw and sanding lines will be big enough to accept pressing and finishing of those 660 sheets per day (just 30 sheets per hour).

Further, the material flow has to be considered and the following calculation shows the details:

Veneer sheets	=	9.7 m <sup>3</sup> /day
+ lumber core	=	33.2 m <sup>3</sup> /day
<hr/>		
= pressed blockboard	=	42.9 m <sup>3</sup> /day
./.	dry waste	= 4.8 m <sup>3</sup> /day
./.	sanding dust	= 0.8 m <sup>3</sup> /day
<hr/>		
= lumber core board	=	37.3 m <sup>3</sup> /day
=====		

37.3 m3/day : 1.22 : 2.44 : 0.019	= 660 sheets/day
	=====
output at 100% production capacity	= 660 sheets/day
at 80% production ratio	= 530 sheets/day

Total production of the blockboard line will be 37.3 m3/day or 660 sheets/day 8' x 4' x 19 mm thickness at 100% production capacity. Yearly production will be about 6,336,000 sq.ft. on 100% production capacity or about 5,060,000 sq.ft. per year on 80% production ratio.

Flush Door Production (on 100% production capacity)

The capacity of this line was based on the material being available as trimming waste from the plywood line. Out of this material of 15.6 m3/day, about 1/4 = 3.6 m3/day can be used and representing sufficient material for those 440 doors per day as an average.

Also for this production line the following calculations have been made:

1 door 3' x 7' = 0.91 m x 2.14 m x 0.0375 m

frame:

4 x 0.032 x 0.025 x 2.20	= 0.00704 m3
6 x 0.032 x 0.025 x 0.95	= 0.00456 m3
3 x 0.032 x 0.025 x 0.30	= 0.00072 m3
total timber input per door	<u>0.01232 m3</u>
	=====

core:

16 x 0.032 x 0.004 x 2.00	= 0.004096 m3
40 x 0.032 x 0.004 x 0.80	= 0.004096 m3
	<u>0.008192 m3</u>
	=====

doors skins:

$$2 \times 0.95 \times 2.20 \times 0.003 = 0.01254 \text{ m}^3$$

=====

3.6 m<sup>3</sup>/day of core material will be available and will be sufficient for 440 doors. 75 doors will be needed for the pre-fabricated houses leaving 365 doors for sale.

Doors (on 100% production capacity)	for Sale	for Pre-Fab Houses
<b>frame:</b>		
kiln dried lumber	= 4.5 m <sup>3</sup> /day	0.9 m <sup>3</sup> /day
core	= 3.0 m <sup>3</sup> /day	0.6 m <sup>3</sup> /day
door skins = plywood	= 4.5 m <sup>3</sup> /day	1.0 m <sup>3</sup> /day
core input	= 13.0 m <sup>3</sup> /day	2.6 m <sup>3</sup> /day
<u>./. dry waste</u>	<u>= 10.0 m<sup>3</sup>/day</u>	<u>2.0 m<sup>3</sup>/day</u>
core	= 3.0 m <sup>3</sup> /day	0.6 m <sup>3</sup> /day
+ kiln dried lumber	= 4.5 m <sup>3</sup> /day	0.9 m <sup>3</sup> /day
+ door skins (plywood)	= 4.5 m <sup>3</sup> /day	1.0 m <sup>3</sup> /day
	= 12.0 m <sup>3</sup> /day	2.5 m <sup>3</sup> /day
./. dry waste	= 0.8 m <sup>3</sup> /day	0.2 m <sup>3</sup> /day
./. sanding dust	= 0.2 m <sup>3</sup> /day	0.0 m <sup>3</sup> /day
<u>./. rejects</u>	<u>= 0.1 m<sup>3</sup>/day</u>	<u>0.0 m<sup>3</sup>/day</u>
= flush doors (solid material)	= 10.9 m <sup>3</sup> /day	2.3 m <sup>3</sup> /day
= per day (on 100% prod.capacity)=	365 doors	75 doors
	=====	=====
= per day (on 80% prod. ratio) =	292 doors	
	=====	
= per year	= 87,600 doors for sale	
	=====	

Truck Flooring (on 100% production capacity)

Also this production line will cover a range of products such as:

- truck flooring
- container flooring

The key machine in the production is the truck flooring press with a known capacity of approximately 4,000 sq. ft. per working shift or approximately 50 m<sup>2</sup>/hr. In 22 working hours the effective output (at 80% production ratio) will be 1,100 m<sup>2</sup> or 31.5 m<sup>3</sup>/day per production line. On 1 line thus the input will be 59.0 m<sup>3</sup>/day on 100% production capacity.

The following calculation shows the details again:

Truck Flooring - (on 100% production capacity)

kiln dried lumber	= 60 %	= 59.0 m <sup>3</sup> /day
./. dry waste	= 2 %	= 2.0 m <sup>3</sup> /day
./. dry saw dust	= 5 %	= 4.9 m <sup>3</sup> /day
./. dry shavings	= 8 %	= 7.9 m <sup>3</sup> /day
./. rejects	= 5 %	= 4.9 m <sup>3</sup> /day
<hr/>		
= truck flooring	= 40 %	= 39.3 m <sup>3</sup> /day

=====		
output at 100% production capacity	= 39.3 m <sup>3</sup> /day	= 27.8 tons/day
: 0.028575 m (1 1/8")	= 1,377 m <sup>2</sup> /day	
x 10.76	= 14,815 sq. ft./day	
x 300	= 4,445,000 sq. ft./year	
 output at 80% production ratio	 = 3,555,000 sq. ft./year	

### Wood Turnings, Roundings and Carvings

There will be also some machines installed for the production of wood turnings, roundings and carvings, since those machines do not represent a large investment. Since production and products, however, are varying too much any output of those lines has not been calculated for the study.

### Waste Balancing

In the table following, the total waste from the various production lines have been grouped. From this, about 70% will be further utilized in the production of wood cement slabs, leaving mainly saw dust and sanding dust. Together with the slabs waste, these are further used as fuel for the boiler. As the table shows, the boiler does not need to utilize all this waste. However, since the difference between supply and requirement is not much, it has been considered as a contingency supply. Hence, for all intents and purposes, the total waste generated by the complex, can be utilized in the boiler.

Waste (in m3/day on 100% production capacity)

	SAWMILLS	PLYWOOD	BLOCK-BOARD	FLUSH-DOORS	TRUCK-FLOORING	TOTAL
wet waste	106.9	28.4				135.3
wet saw dust	58.3					58.3
dry waste		16.6	9.9	13.0	2.0	41.5
dry saw dust			3.7		4.9	8.6
dry shavings			2.2		7.9	10.1
dry rejects		2.2		0.1	4.9	7.2
dry sanding dust		13.3	0.8	0.2		14.3
<b>total waste</b>	<b>165.2</b>	<b>60.5</b>	<b>16.6</b>	<b>13.3</b>	<b>19.7</b>	<b>275.3</b>
././ for cement slabs (Page 101)	106.9	47.2	9.9	13.1	4.2	181.3
remaining slabs waste (Page 101)	58.3	13.3	6.7	0.2	15.5	94.0
<b>total</b>						<b>122.3</b>
././ for boiler (Page 103)						122.3
surplus waste						0.0

Total Loss

shrinkage	30.5	19.0				49.5
pressing		2.2				2.2
<b>total loss</b>	<b>30.5</b>	<b>21.2</b>				<b>51.7</b>

In order to fully utilize the raw material input, waste from the various production lines should be further processed into wood cement slabs. These would be used as the basic material for pre-fabricated houses. The production will make use of solid wood waste, leaving out sanding dust and saw dust. As per the calculation which follows, the production of wood cement slabs has been detailed in the following calculation:

Wood Cement Slabs (on 100% production capacity)

Waste from production lines	= 181.3 m <sup>3</sup> /day	
+ re-cycling of slabs production waste	= 12.8 m <sup>3</sup> /day	
	= 194.1 m <sup>3</sup> /day	
././ dust = 15%	= 28.3 m <sup>3</sup> /day	(for boiler)
	= 165.8 m <sup>3</sup> /day	
: 0.85 = wood cement slabs (165.8 m <sup>3</sup> solid)	= 195.1 m <sup>3</sup> /day	
././ trimming waste ( 11.8 m <sup>3</sup> solid)	= 13.9 m <sup>3</sup> /day	(for re-cycling)
	(154.0 m <sup>3</sup> solid)	= 181.2 m <sup>3</sup> /day
././ cutting waste of slabs ( 1.0 m <sup>3</sup> solid)	= 1.2 m <sup>3</sup> /day	(for re-cycling)
= wood cement slabs unit		
15 houses per day (153.0 m <sup>3</sup> solid)	= 180.0 m <sup>3</sup> /day	

Roofing

air dried lumber	= 63%	= 22.8 m <sup>3</sup> /day
././ dry waste	= 6%	= 2.2 m <sup>3</sup> /day
roofing for pre-fabricated houses	= 57%	= 20.6 m <sup>3</sup> /day

Doors and Windows

mouldings	= 30%	= 5.6 m <sup>3</sup> /day
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Doors

5 doors per house x 15 houses/day = 75 doors/day  
-----

The output of this line will be approximately 15 houses per day on 100% production capacity and the latter will consume about 70% of the total waste of the industrial complex. The rest of the waste will then be needed as fuel for the boiler to produce the necessary steam with practically nothing remaining.

At 80% production ratio the output of this line will be about 12 houses per day based on an house area of about 25 ft. x 25 ft.

Boiler Capacity (on 100% production capacity)

This section caters to the generation of the possible steam supply that is needed by the various production lines. The wood waste from these lines, in turn, provides the necessary fuel for the boiler. Subsequently, the calculation follows:

drying lumber

306.2 m<sup>3</sup>/day x 550 kg/m<sup>3</sup>  
x 0.15 (25-10%) x 1,000 kcal/kg = 25,300,000 kcal/day  
: 24 hours : 500,000 kcal/ton = 2.11 tons/hr

drying veneer

189.6 m<sup>3</sup>/day x 550 kg/m<sup>3</sup>  
x 0.72 (80-8%) x 1,200 kcal/kg = 90,100,000 kcal/day  
: 24 hours : 500,000 kcal/ton = 7.51 tons/hr

pressing

50 openings = 900,000 kcal/hr  
x 22 hours = 19,800,000 kcal/day = 1.65 tons/hr

others (lumber core, composer, cross feed splicer, truck flooring press)	= 10,600,000 kcal/day= 0.88 tons/hr
total steam required	=145,800,000 kcal/day= 12.15 tons/hr
+ 20% allowance for capacity	= 34,200,000 kcal/day= 2.85 tons/hr
total boiler capacity	=180,000,000 kcal/day
: 22 hours	= 7,500,000 kcal/day -----
= 1 boiler 12 tons/hour	= 12.0 tons/hr -----

Fuel

steam requirement	=145,800,000 kcal/day
+ 8.5% allowance for fuel	= 12,400,000 kcal/day
total kcal required	=158,200,000 kcal/day
available wood waste	=122.3 m3/day
required wood waste:	
= 158,200,000 kcal/day : 2,350 kcal/kg	
: 550 kg/m3	=122.3 m3/day

which means that, based on the before-stated calculation, neither surplus waste will be remaining nor any fuel will be missing.

5.3. Softwood Project  
-----

Since Tanzania and the other East African countries do not provide the necessary quantities and favourable conditions the idea with setting up the softwood complex in Austria was taken and calculated in the following:

5.3.1. List of Productions and Capacities (on 100% prod. capacity)

Softwood kiln dried timber	50,160 m3	/year
Softwood plywood	37,500 m3	/year
Chipboard	25,000 m3	/year
Sliced veneer	5,000,000 m2	/year
Flush doors	800,000 doors	/year

5.3.2. Material Requirements

Sawn Timber

present softwood timber imports

= 40,000 m3 : 0.70 recovery	=	57,140 m3/year
total log input for 80% export quota	=	57,140 m3/year
+ log input for 20% local market quota		
= 80% production ratio in total	=	<u>71,500 m3/year</u>
= 100% production capacity	=	89,290 m3/year
= total nominal log input for sawn timber		

total log input in fact for sawn timber (based on 80% prod. ratio) = 71,500 m3/year

Plywood

Plywood output at 80% prod. ratio	=	30,000 m3/year
at 100% prod. capacity	=	37,500 m3/year

based on 40% recovery

log input at 100% prod. capacity	=	93,750 m3/year
log input in fact at 80% prod. ratio	=	<u>75,000 m3/year</u>

75,000 m3/year

total effective log input required 146,500 m3/year  
\*\*\*\*\*

5.3.3. Balancing of Production Capacities

Sawmill (on 100% production capacity)

89,290 m3/year : 230 days		= 388.0 m3/day
log input	= 100 %	= 388.0 m3/day
././ wet saw dust	= 10 %	= 38.8 m3/day
././ wet waste	= 14 %	= 54.3 m3/day
<hr/>		
= wet lumber	= 76 %	= 294.9 m3/day
././ shrinkage	= 6 %	= 23.3 m3/day
<hr/>		
= kiln dried lumber	= 70 %	= 271.6 m3/day for sale
=====		

This means that 271.6 m3/day x 0.8 (80% production ratio)  
= 217.3 m3/day x 230 days = 49,970 m3/year will be produced for  
sale out of which about 20% will be for local sale and about 40,000 m3/  
year for export to Kuwait.

For a production in 2 shifts the following machines will  
be required:

input	= 388.0 m3/day
: 15 hrs/day	= <u>25.9 m3/hr</u>
average diameter of logs estimated = 10"	= 0.254 m
	= 0.050645 m2
25.9 m3/hr : 0.050645 m2	= 511 m/hr
: 60 min/hr	= 8.5 m/min
	=====

main machines required:

- 2 gang saw machines 71 cm working width, with mechanised infeed and outfeed
- 2 double edger
- 4 cross cut saws

Plywood (on 100% production capacity)

log input per year 93,750 m<sup>3</sup> (100%) 75,000 m<sup>3</sup> (80%)

log input	=	100 %	=	408.0 m <sup>3</sup> /day
./.	wet waste	=	15 %	= 61.2 m <sup>3</sup> /day
./.	peeler core	=	10 %	= 40.8 m <sup>3</sup> /day
=	wet veneer	=	75 %	= 306.0 m <sup>3</sup> /day
./.	shrinkage	=	8 %	= 32.6 m <sup>3</sup> /day
=	dry veneer	=	67 %	= 273.4 m <sup>3</sup> /day
./.	dry waste	=	11 %	= 44.9 m <sup>3</sup> /day
=	spliced veneer	=	56 %	= 228.5 m <sup>3</sup> /day
./.	loss for pressing	=	2 %	= 8.2 m <sup>3</sup> /day
=	pressed plywood	=	54 %	= 220.3 m <sup>3</sup> /day
./.	dry waste	=	7 %	= 28.6 m <sup>3</sup> /day
./.	sanding dust	=	6 %	= 24.5 m <sup>3</sup> /day
./.	rejected plywood	=	1 %	= 4.0 m <sup>3</sup> /day
=	plywood	=	40 %	= 163.2 m <sup>3</sup> /day

This means that 163.2 m<sup>3</sup>/day x 0.8 (80% production ratio)  
= 130.6 m<sup>3</sup>/day x 230 days = 30,000 m<sup>3</sup>/year will be produced for  
sale in Austria and Europe.

For a production in 2 shifts the following main machines  
will be required:

peeling : log diameter 10" = 0.254 m = 0.050645 m<sup>2</sup>

log length 100" = 2.54 m

log volume = 2.54 m x 0.050645 m<sup>2</sup> = 0.1286 m<sup>3</sup>

408.0 m<sup>3</sup>/day : 0.1286 m<sup>3</sup>/log = 3,171 logs to be  
peeled per day

: 15 hrs : 60 min = 3.5 logs/min

= 1 x 9-ft-lathe with automatic centering and charging

drying : 306.0 m<sup>3</sup>/day : 15 hrs : 60 min = 0.34 m<sup>3</sup>/min

: 0.0032 m : 2.54 m = 41.8 lin mtrs/min x 3 min  
= 125.5 m

: 5 decks = 25.1 = 28 m 3-deck dryer

pressing : 163.2 m<sup>3</sup>/day plywood : 1.50 m : 3.00 m : 0.0095  
= 3,820 sheets/day : 15 hrs : 60 min = 4.3 sheets/min  
x 5.5 min = 23.3 opening = 1 x 30 opening hot press  
= 2 x cold press  
= 2 x glue spreaders

### Veneer and Flush Door

The veneer and the flush door factories are in operation and nothing needs to be changed or installed, therefore, no calculation has been made.

### Chipboard (on 100% production capacity)

waste from sawmill	=	92 %	=	158.7 m <sup>3</sup> /day
+ waste from chipboard line	=	8 %	=	13.8 m <sup>3</sup> /day
<hr/>				
= total input	=	100 %	=	172.5 m <sup>3</sup> /day
<hr/>				
./. shrinkage	=	10 %	=	17.3 m <sup>3</sup> /day
<hr/>				
= dry chips	=	90 %	=	155.2 m <sup>3</sup> /day
<hr/>				
./. screening waste	=	9 %	=	15.5 m <sup>3</sup> /day
<hr/>				
= screened chips	=	81 %	=	139.7 m <sup>3</sup> /day
<hr/>				
./. pressing loss	=	1 %	=	1.7 m <sup>3</sup> /day
<hr/>				
= pressed chipboard	=	80 %	=	138.0 m <sup>3</sup> /day
<hr/>				
./. dry waste	=	8 %	=	13.8 m <sup>3</sup> /day for chipboard
<hr/>				
./. sanding dust	=	8 %	=	13.8 m <sup>3</sup> /day
<hr/>				
./. rejects	=	1 %	=	1.7 m <sup>3</sup> /day
<hr/>				
= chipboard	=	63 %	=	108.7 m <sup>3</sup> /day for sale
<hr/>				

This means that 108.7 m<sup>3</sup>/day x 0.8 (80% production ratio)  
 = 87.0 m<sup>3</sup>/day x 230 days = 20,000 m<sup>3</sup>/year will be produced for  
 sale out of which about 90% will be for local sale and about  
 2,000 m<sup>3</sup>/year for export to Kuwait.

Waste (in m<sup>3</sup>/day) (on 100% production capacity)

	Sawmill	Plywood	Total
wet waste	54.3	61.2	115.5
wet peeler cores	-	40.8	40.8
wet saw dust	38.8	-	38.8
dry waste	-	73.5	73.5
sanding dust	-	24.5	24.5
rejects	-	4.0	4.0
<b>total waste</b>	<b>93.1</b>	<b>204.0</b>	<b>297.1</b>
<b>./. for chipboards</b>	<b>-</b>	<b>-</b>	<b>158.7</b>
<b>remaining</b>	<b>-</b>	<b>-</b>	<b>138.4</b>
<b>+ chipboard waste</b>	<b>-</b>	<b>-</b>	<b>44.8</b>
<b>total</b>	<b>-</b>	<b>-</b>	<b>183.2</b>

Total loss

	<u>chipboard</u>	<u>Sawmill</u>	<u>Plywood</u>	<u>Total</u>
shrinkage	17.3	23.3	32.6	73.2
pressing loss	1.7	-	8.2	9.9
<b>total loss</b>	<b>19.0</b>	<b>23.3</b>	<b>40.8</b>	<b>83.1</b>

Steam requirement

steam requirement		206,800,000 kcal/day
: 2,450 kcal/kg : 450 kg/m <sup>3</sup>		187.0 m <sup>3</sup> /day
required wood waste	=	187.0 m <sup>3</sup> /day
available wood waste	=	183.2 m <sup>3</sup> /day

Boiler Capacity (at 100% production capacity)

This section caters to the generation of the possible steam supply that is needed by the various production lines. The wood waste from these lines, in turn, provides the necessary fuel for the boiler. Subsequently, the calculation follows:

plywood

		<u>kcal/day</u>	<u>to/hr</u>
drying	: 306.0 m <sup>3</sup> /day x 0.74 (80-6%) x 450 x 1000 : 24 : 500,000	= 101,900,000	8.5
pressing:	30 opening	= 12,000,000	1.0

sawn timber

drying	: 294.9 x 0.70 (80-10%) x 450 x 1000 : 24 : 500,000	= 92,900,000	7.8
		<hr/>	
		206,800,000	17.3
+ 16% allowance		33,200,000	2.7
		<hr/>	
		240,000,000	20.0
		<hr/>	

Boiler 20 tons



5.4. Terms of Reference

As a consequence to the calculations and considerations being done so far, the feasibility study for the "Integrated Hardwood Timber Complex" and the "Integrated Softwood Timber Complex" should approximately follow the Terms of Reference stated below:

Integrated Hardwood Timber Complex

1. Introduction
  - 1.1 History of the Project
  - 1.2 The Company
    - 1.2.1 The Company's Shareholders
    - 1.2.2 The Company's Consultants
  - 1.3 Objectives of the Project
    - 1.3.1 Assessment of Material Requirement for the Woodworking Industry in Kuwait
    - 1.3.2 Most Economical Conditions for the Project
    - 1.3.3 Diversification of Kuwait Participation in Industries
  - 1.4 Review on the Consultant's Report for the Assessment of Raw Materials
  
2. Integrated Hardwood Timber Complex
  - 2.1 Markets
    - 2.1.1 In Kuwait
    - 2.1.2 World Markets
  - 2.2 Marketing Strategy
  - 2.3 Raw Material
    - 2.3.1 Raw Material Resources
    - 2.3.2 Forest Survey Report
    - 2.3.3 Transportation of Raw Material
  - 2.4 Location of the Factory Site
  - 2.5 Labour Conditions for the Project

- 2.6.       **Organization of the Company**
  
- 3.         **Technical Planning**
- 3.1.       **List of Products and Capacities**
- 3.2.       **Production Capacity and Specifications**
- 3.2.1.     **Use of Raw Material**
- 3.2.2.     **Technical Details**
- 3.3.       **Balancing of Production Capacities**
- 3.3.1.     **Sawmill Production**
- 3.3.2.     **Plywood**
- 3.3.3.     **Blockboard**
- 3.3.4.     **Flush Door Production**
- 3.3.5.     **Moulding and Furniture Components**
- 3.3.6.     **Truck Flooring**
- 3.3.7.     **Wood Turnings, Roundings, and Carvings**
- 3.3.8.     **Waste Balancing**
- 3.3.9.     **Production of Wood Cement Slabs**
- 3.3.10.    **Boiler Capacity**
- 3.4.       **Material Flow**
- 3.5.       **Production Flow**
- 3.6.       **Machinery List and Specifications**
- 3.7.       **Total Electricity Required**
- 3.8.       **Water, Steam and Compressed Air Requirement**
- 3.9.       **Staff and Labour Requirement and Training Programme**
- 3.10.      **Land and Building Requirements**
- 3.11.      **Ground Plan and Layout**
- 3.12.      **Transport of the Final Products**
  
- 4.         **Cost Calculation**
- 4.1.       **Variable Production Costs**
- 4.1.1.     **Raw Material**
- 4.1.2.     **Glue Supplies**
- 4.1.3.     **Electricity Costs**
- 4.1.4.     **Fuel for the Boiler**

- 4.1.4.1. Fuel Oil
- 4.1.4.2. Wood Waste as Fuel
- 4.1.5. Packing Material
- 4.1.6. Factory Supplies
- 4.1.7. Material for Wood Cement Slabs
- 4.1.8. Transportation Costs for Final Products
- 4.2. Staff and Labour Costs
- 4.3. Overheads
  - 4.3.1. Water Requirement
  - 4.3.2. Operational Costs
  - 4.3.3. Transport and Travel
  - 4.3.4. Repairs and Maintenance
  - 4.3.5. Insurance
  - 4.3.6. Summary Overhead Costs
- 4.4. Investment, Depreciation and Interests
  - 4.4.1. Land Investment
  - 4.4.2. Building Costs
  - 4.4.3. Civil Works
  - 4.4.4. Investment Machines and Equipment
  - 4.4.5. Pre-Operational Costs
    - 4.4.5.1. Staff and Labour Costs (pre-operational)
    - 4.4.5.2. Installation Costs Expatriate Fitters
    - 4.4.5.3. Other Installation Costs
    - 4.4.5.4. Interests for Bank Loan during Pre-Operational Time
    - 4.4.5.5. Summary of the Pre-Operational Costs
  - 4.4.6. Summary Investment, Depreciation and Interests
- 4.5. Economic Comparison of the Production Lines
  
- 5. Financial Planning
  - 5.1. Basic Consideration
    - 5.1.1. Investment
    - 5.1.2. Foreign Exchange Requirements
    - 5.1.3. Capital Structure
  - 5.2. Production and Sales

- 5.3. Development of the Costs
- 5.4. Cash Flow
- 5.5. Profit and Loss Account
- 5.6. Sensitivity Analysis
- 6. Summary of the Integrated Hardwood Timber Complex
  - 6.1. Key Figures
  - 6.2. Key Percentages
  - 6.3. Break-Even Point
  - 6.4. Summary

Integrated Softwood Timber Complex

1. Introduction
  - 1.1. History of the Project
  - 1.2. The Joint Venture Company
    - 1.2.1. The Company's Joint Venture Partners
    - 1.2.2. The Company's Consultant
  - 1.3. Objectives of the Project
    - 1.3.1. Assessment of Material Requirement for the Woodworking Industry in Kuwait
    - 1.3.2. Most Economical Conditions for the Project
    - 1.3.3. Diversification of Kuwait Participation in Industries
  - 1.4. Review on the Consultant's Report for the Assessment of Raw Materials
  
2. Integrated Softwood Timber Complex
  - 2.1. Markets
    - 2.1.1. In Kuwait
    - 2.1.2. In Austria
    - 2.1.3. In Europe
  - 2.2. Marketing Strategy
  - 2.3. Raw Material
    - 2.3.1. Raw Material Resources
    - 2.3.2. Transportation of Raw Material
  - 2.4. Location of the Factory Site
  - 2.5. Labour Conditions for the Project
  - 2.6. Organization of the Company
  
3. Technical Planning
  - 3.1. List of Products and Capacities
  - 3.2. Production Capacity and Specifications
    - 3.2.1. Use of Raw Material

- 3.2.2. **Technical Details**
- 3.3. **Balancing of Production Capacities**
  - 3.3.1. **Sawmill Production**
  - 3.3.2. **Plywood Production**
  - 3.3.3. **Sliced Veneer Production**
  - 3.3.4. **Flush Doors Production**
  - 3.3.5. **Chipboard Production**
  - 3.3.6. **Waste Balancing**
  - 3.3.7. **Boiler Capacity**
- 3.4. **Material Flow**
- 3.5. **Production Flow**
- 3.6. **Machinery List and Specifications**
- 3.7. **Total Electricity Requirement**
- 3.8. **Water, Steam and Compressed Air Requirement**
- 3.9. **Staff and Labour Requirements and Training Programme**
- 3.10. **Land and Building Requirements**
- 3.11. **Ground Plan and Layout**
- 3.12. **Transport of the final Products**
  
- 4. **Cost Calculation**
  - 4.1. **Variable Production Costs**
    - 4.1.1. **Raw Materials**
    - 4.1.2. **Electricity Costs**
    - 4.1.3. **Fuel for Boiler**
      - 4.1.3.1. **Fuel Oil**
      - 4.1.3.2. **Wood Waste as Fuel**
    - 4.1.4. **Packing Material**
    - 4.1.5. **Factory Supplies**
    - 4.1.6. **Transportation Costs for Final Products**
  - 4.2. **Staff and Labour**
  - 4.3. **Overheads**
    - 4.3.1. **Water Requirements**
    - 4.3.2. **Operational Costs**
    - 4.3.3. **Transport and Travel**

- 4.3.4. **Repairs and Maintenance**
- 4.3.5. **Insurance**
- 4.3.6. **Summary Overhead Costs**
- 4.4. **Investment, Depreciation and Interests**
  - 4.4.1. **Land Investment**
  - 4.4.2. **Building Costs**
  - 4.4.3. **Civil Works**
  - 4.4.4. **Investment Machines and Equipment**
  - 4.4.5. **Pre-Operational Costs**
    - 4.4.5.1. **Staff and Labour (pre-operational)**
    - 4.4.5.2. **Installation Costs Expatriate Fitters**
    - 4.4.5.3. **Other Installation Costs (pre-operational)**
    - 4.4.5.4. **Interests for Bank Loan during Pre-Operational Time**
    - 4.4.5.5. **Summary of the Pre-Operational Costs**
  - 4.4.6. **Summary Investment, Depreciation and Interests**
- 4.5. **Economic Comparison of the Production Lines**
  
- 5. **Financial Planning**
  - 5.1. **Basic Consideration**
    - 5.1.1. **Investment**
    - 5.1.2. **Foreign Exchange Requirements**
    - 5.1.3. **Capital Structure**
  - 5.2. **Production and Sales**
  - 5.3. **Development of the Costs**
  - 5.4. **Cash Flow**
  - 5.5. **Profit and Loss Account**
  - 5.6. **Sensitivity Analysis**
- 6. **Summary for the Softwood Timber Complex**
  - 6.1. **Key Figures**
  - 6.2. **Key Percentages**
  - 6.3. **Break-Even Point**
  - 6.4. **Summary**

5.5. Financial Considerations  
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Compared to former financial considerations where about 10 - 15 Million US\$ have been considered for setting up the project, these figures will have to be considered now higher because of the larger integration and the inclusion of several additional production lines. Those production lines, however, are decisive for the economy of the whole project because they provide not only for a much higher added value, but also for the wider utilization of the forest potentials and the utilization of the wood waste. For this reason, it should be worthwhile to consider the higher investment, but to get a much better economy of the projects.

The financial considerations for the both projects have been done as follows based on 1975 conditions for setting up such projects in West Malaysia or West Africa and in Europe.

Integrated Hardwood Timber Complex

	<u>US\$</u>	<u>US\$</u>
land, building and civil works	3,200,000.-	
machinery	6,500,000.-	
pre-operational costs	2,300,000.-	
working capital	<u>2,500,000.-</u>	
	14,500,000.-	14,500,000.-

Integrated Softwood Timber Complex

	<u>US\$</u>	<u>US\$</u>
land, building and civil works	2,500,000.-	
machinery	3,700,000.-	
pre-operational costs	1,100,000.-	
working capital	<u>1,200,000.-</u>	
	8,500,000.-	<u>8,500,000.-</u>
total capital required		23,000,000.- -----



**6. Projections**  
=====

The report indicates clearly that hardwood raw material would be available from different sources and the integrated hardwood timber complex could be established in several countries, whereby the first priority was given to the Nestin project in West Malaysia. However, the softwood timber complex will have to be considered in Europe where a larger softwood potential is available.

Before the implementation of the project can be started it will, therefore, have to be decided which countries will be given preference for setting up of this complex. After this decision is made the following steps of the implementation will have to be done:

**6.1. Forest Survey Report**  
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The first step in the implementation scheme will be detailed forest surveys to be done in the countries given preference. A skilled forest team must be hired to survey the forest and to write a detailed forest survey report which indicates clearly the following facts:

- the quantity of trees available
- the diameter of the trees and percentages of the diameters
- the timber species in quantities and percentages also compared to the area of timber standings
- the logging conditions in connection with density of the forest, availability of infrastructure and terrain.

**6.2. Feasibility Study**  
-----

Based on the forest survey report, the consultant must be hired for working out the feasibility study.

It is advisable to make a final choice for the consultants before ordering the feasibility study because working out of the feasibility report and the implementation of the project should be in the hands of the same consultants. Details for the feasibility study are shown in the Terms of Reference under paragraph 5.4.

6.3. Implementation  
-----

After the feasibility study is finished and is presented to the company or the authorities, the final implementation of the project can be started and the following steps have to be done in the sequence mentioned below:

6.3.1. Joint Venture Agreements

Based on the feasibility study it will now be necessary to negotiate and sign the Joint Venture Agreements with the future partners in the companies and to register and establish the companies themselves.

6.3.2. Finance

Also based on the feasibility study the joint venture partners will have to consult banks and finance organizations for the provision of the necessary funds. It will be imperative that all necessary funds with some additional allowances will be ensured before the project will be started.

6.3.3. Consulting

During the negotiations of the Joint Venture Agreements and the finance arrangements, the consultants should also be present and should assist the company. However, the green light should be finally set for the consultants only after the Joint Venture Agreements

are signed and finance is completely secured.

The Agreement with the consultants should include also the complete training programme for the staff and labour requirement and the supervision of the setting up of the buildings and the installations of machines and equipment involved.

#### 6.3.4. Marketing

Already in the very early stage of the implementation, well-known marketing companies in the world should be informed about this new project and should be asked whether they would like to take over the marketing after the project is in operation.

About 3 months before beginning of the trial operation, a public relation action should be started informing many of the trading companies, importers and agents about the projected implementation time, the manufacturing programme, the quantities, qualities and species to be offered in the very near future.

#### 6.3.5. Management

Approximately 6 months before the trial operation, Management Agreements should be negotiated with reliable companies. Also, the consultants might be in a position to take over the management of the companies after the installations are finished. This would be advantageous since then the project planning, supervision of implementation and installation, trial operation and lastly also the complete running of the company would be in one hand.

With regard to such management contracts it will be important to include the total general management and the sub-management including factory supervisors etc. Details of the manage-

ment force particularly with respect to the employment of expatriates will have to be considered carefully with the joint venture partners.

6.3.6. Timing

From the date of the decision which countries will be given preference which means, the beginning of the implementation period the following timing scheme will have to be, approximately, considered

- forest survey	4 months
- feasibility study	4 months
- joint venture and finance negotiations	2 months
- implementation and installation	10 months
- trial operation	2 months
- total time requirement, i.e. beginning of the production approximately after	<hr/> 22 months -----

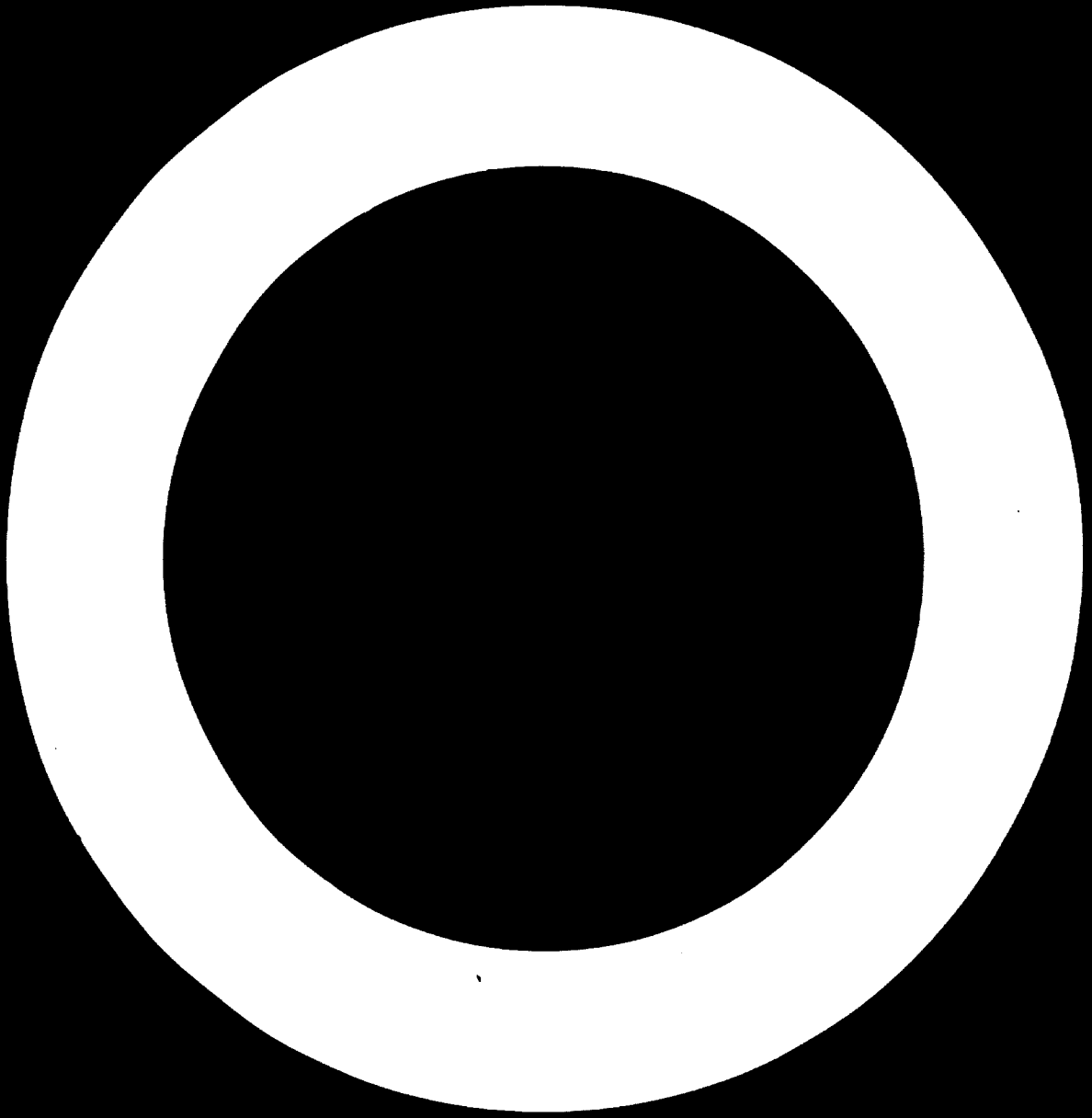
6.4. Summary  
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As a summary it can be stated that raw material is available in several countries in the world and the governments of those countries are also interested in a joint venture with Kuwait for logging, as well as for processing of timber.

A market for the products of the projects is in Kuwait itself and it can be expected that this market will be available in Kuwait for another 20 years. With the assessment of raw materials, the industry in Kuwait can produce safely. However, there is also a clear indication that world markets will increase for wooden products and in case that the products of the projects cannot be sold in

Kuwait, it should be no problem to find markets on a world wide basis. Softwood markets are already and also in the future existing in Europe.

With hired know-how for the forest survey, the feasibility study, the consulting supervision of the implementation and the management it should be possible, too, to realize and to operate the projects successfully.



ANNEX

TIMBER CONCESSION AGREEMENT

PREAMBLE FORESTS PRODUCTS UTILIZATION CONTRACT

BETWEEN

THE GOVERNMENT OF THE REPUBLIC OF LIBERIA

AND

.....

This Concession Agreement is made and entered into the City of Monrovia, County of Montserrado, Republic of Liberia, this \_\_\_\_\_ of \_\_\_\_\_, 1973 \_\_\_\_\_ under the General Business Law, Title 15 of the Liberian Code of Laws of 1956 Revised

BETWEEN

The Government of the Republic of Liberia, represented by the Chairman of the Concession Commission and the Minister of Agriculture

AND

\_\_\_\_\_, a company incorporated under the laws of Liberia, represented by \_\_\_\_\_ who is legally authorized to act on behalf of the Company.

Approved by the President of Liberia  
..... 19 \_\_\_\_\_  
(Date of Approval)

Ratified by the Legislature  
..... 19 \_\_\_\_\_  
(Effective Date)

ARTICLE 1

1. DEFINITIONS:

Unless the context shall otherwise clearly indicate, the following terms used in this Agreement shall have the respective meanings set forth below.

1) Affiliate

A person shall be considered as an affiliate of another person if the first person, directly or through any third party or parties controls, is controlled by or is under common control with the second person. The term "control" means the possession, directly or indirectly, of the power to direct or cause the direction of the management and policies of a person, whether through the ownership of voting securities or by contract or otherwise. In all events, "control" shall be deemed to include ownership, directly or indirectly, of an aggregate of 10% or more of either the voting power or the equity interests.

2) Concessionaire

The term "Concessionaire" shall mean the \_\_\_\_\_, its assigns, transferees and successors in title. Provided, however, that assignments, transfers and rights of succession shall be governed by Article 1 Section 6 of this Agreement.

3) Date of Approval

The term "Date of Approval" means the date on which this Agreement was signed by the President of Liberia.



- 4) Effective Date The term "Effective Date" means the date on which this is ratified by the Legislature or on such effective date as may be fixed by the Legislature.
- 5) Timbering Area The term "Timbering Area" means the initial area as described in Article 1 Section 3 of this Agreement.
- 6) Liberian Currency The term "Liberian Currency" shall mean the currency from time to time efficiently recognized by the Liberian Government.
- 7) Government The term "Government" includes all branches, divisions instrumentalities and agencies of the Government.

ARTICLE I. SECTION I

- 8) Merchantable Timber The term "Merchantable Timber" shall mean timber out for commercial use as that term is defined in Chapter 2 Section 20 of Title 24 (Natural Resources Law), Liberian Code of Laws of 1956 as amended;
- 9) Timber and Forest Products The terms "Timber and Forest Products" shall have the same meaning as attributed to them in Chapter 1, Section 1 of Title 24 (Natural Resources Law) of the Liberian Code of Laws of 1956, as amended.
- 10) Infrastructure The term "Infrastructure" means non-movable assets of the following types:

- (a) **Transportation and communication facilities** (including roads, bridges, railroads, airports, landing strips and landing pads for aircraft, garages, canals, aerial tramways, pipe-lines and radio, telephone and telegraph facilities.)
- (b) **Port facilities** (including docks, harbours, piers, jetties, breakwaters terminals facilities and warehouses, and loading and unloading equipment.)
- (c) **Electrical power, water and sewerage facilities** (including electrical generating plants and transmission lines, dams, water drains water supply systems and systems for the disposal of plant wastes and sewerage);
- (d) **Public welfare facilities** (including schools, hospitals and public halls) and
- (e) **Miscellaneous facilities** in connection with the operation of the foregoing (including offices, machine shops, foundries, repair shops and warehouses.)

11) **Plant and Equipment**

The term "Plant and Equipment" means the following assets (other than Infrastructure assets) necessary or desirable for operations hereunder:

- (a) **Timber felling and extraction equipment;**
- (b) **Facilities and equipment to saw, cut and otherwise process timber;**

- (c) Facilities and equipment in connection with the operation of the foregoing (including offices, machine shops, foundries, repair shops and warehouses);
- (d) Facilities and equipment for the maintenance of personnel (including dwellings, stores, messhalls and recreational facilities) and

**ARTICLE I. SECTION L.**

- (e) Movable equipment, including motor vehicles and railroad rolling stock necessary or desirable for us in connection with the Infrastructure.

**12) Person or persons**

The term "Person or persons" includes corporations, partnerships, unincorporated partnerships, firms and companies.

**2. THE GRANT OF CONCESSION**

- (1) In consideration of the undertaking by the Concessionaire to pay all surface rents, stumpage fees and other fees and taxes hereinafter prescribed and to perform and observe the terms and conditions of this Agreement, the GOVERNMENT hereby grants to the CONCESSIONAIRE subject to the Concession Laws of Liberia and the conditions set forth in this Agreement, the exclusive right to harvest, process, transport and market timber and other forest products and to conduct related operations within the Concession Area hereinafter defined and for the term hereinafter defined and for the term hereinafter specified.

- 2) The GOVERNMENT reserves the right of access to the Concession Area for the purpose of any sub-soil investigation (or other reasonable investigation) it wishes to make, provided that its damage to the CONCESSIONAIRE's property from such investigation. The GOVERNMENT agrees to provide fair and reasonable compensation to the CONCESSIONAIRE for such damage.

### 3. CONCESSION AREA

- 1) The CONCESSIONAIRE shall have the right to survey and harvest timber and other forest products in an area consisting of that portion of land lying and being within the metes and bounds below:
- 2) The Concession Area which comprises approximately \_\_\_\_\_ acres of land is depicted on a map to be annexed hereto, and made a part hereof as Exhibit A. Provided, however, that when the CONCESSIONAIRE shall have complied with that portion of Section III of the Forest Management Plan (See Article II Section 3(5) of this Agreement) requiring aerial photographs and planimetric maps such photographs and maps shall be deemed determinative insofar as this Concession Area is concerned and shall be substituted for said Exhibit "A".

### 4. TERM OF THE AGREEMENT; PERIODIC REVIEW; RENEWAL OF THE CONCESSION

- 1) This Agreement shall be for a term of 20 years as from the Effective Date as defined herein, provided, however, that not less often than 5 years, the parties hereto shall consult together in Liberia for the purpose

of considering such changes in clarifications or modifications to this Agreement as either party deems to be appropriate.

- 2) If the CONCESSIONAIRE, not more than two (2) years and not less than three (3) months before the expiration of this Agreement applies in writing to the Minister of Agriculture for a renewal of the Concession the subject of this Agreement and if it shall have paid all taxes, fees and rents due (except for such taxes, fees and rents —if any— which are the subject of a good faith controversy between GOVERNMENT and CONCESSIONAIRE) and shall have satisfactorily performed all its obligations under this Agreement up to the date of such application, it shall be entitled to a renewal of this Agreement for a further period of 20 years on terms and conditions then to be agreed upon, provided, however, that such of those terms and conditions as relate to taxes, royalties, fees (including stumpage fees) duties and rents then offered by GOVERNMENT to the CONCESSIONAIRE shall not be less favourable than those offered to other timber concessionaires within three (3) years immediately prior to the date of the CONCESSIONAIRE's application.

### 5. EFFECTIVE DATE

Following the execution hereof, this Agreement shall be submitted to the President of Liberia for his approval and shall subsequently be submitted to the Legislature for ratification. After such ratification, this Agreement shall become effective retroactively as from the date of Approval by the President of Liberia.

**6. ASSIGNMENT OF CONCESSION**

- 1) The CONCESSIONAIRE shall at all times maintain a majority interest in the Concession and shall not, except in keeping with sub-section (2) of this Articles, assign the Concession nor any part thereof granted under this Agreement nor any rights, privileges, liabilities or obligations granted or imposed by this Agreement, nor any interest in the Concession without the previous consent in writing of the GOVERNMENT, except that the consent of the GOVERNMENT shall not be required where the assignment is to another company in which the CONCESSIONAIRE holds one hundred percent of the equity, provided that the GOVERNMENT shall be informed of any such assignment within thirty (30) days of the assignment.
  
- 2) The GOVERNMENT shall not give its consent to an assignment unless it is satisfied:
  - (a) that the proposed assignee is itself of good reputation or is a member of a group of companies of good reputation or is owned by a company or companies of good reputation;
  
  - (b) that there is likely to be available to the proposed assignee either from its own resources or through other companies in the group of which it is a member, or otherwise, sufficient technical knowledge, experience and knowhow and sufficient financial resources to enable it effectively to carry out a program satisfactory to the Minister of Agriculture for the operations hereunder; and

(c) that the proposed assignee is in all other respects acceptable to the GOVERNMENT; and provided that the Minister of Agriculture is satisfied as aforesaid he shall not unreasonably withhold his consent to the assignment.

- 3) The assignee shall have all the rights and privileges and shall assume all the liabilities and obligations of the assignor with respect to what is assigned without relieving the Concession of such liabilities and obligations unless the GOVERNMENT expressly consents to such a release.
- 4) For the purposes of this Section, the term assign shall include the admission into partnership of any third party in the activities and operations of the CONCESSIONAIRE under this Agreement and shall include the mortgaging of any rights, privileges, liabilities or obligations granted or imposed by this Agreement.

7. SURRENDER OF ALL OR PART OF THE CONCESSION BY THE CONCESSIONAIRE

The CONCESSIONAIRE may at any time during the term of this Agreement or any renewal thereof surrender the rights granted by this Agreement in respect of the whole or part of the Concession Area by giving to the Minister of Agriculture twelve (12) months notice in writing. Such surrender shall be without prejudice to any obligation or liability imposed by or incurred under this Agreement.

8. PERFORMANCE BOND AND REQUIRED MINIMUM EXPENDITURE

- 1) It is covenanted and mutually agreed that the CONCESSIONAIRE shall within thirty (30) days after the signing of this Agreement deposit with the Concession & Investment Commission

a cash deposit amounting to \$50,000.00 (Dollars Fifty thousand) in favour of the Government of Liberia warranting that the CONCESSIONAIRE shall conform with all the terms and conditions of this Agreement and shall faithfully and promptly commence survey and other operations within six (6) months from the Effective Date of this Agreement and should the CONCESSIONAIRE fail to perform in accordance with the provisions of this Section then this Agreement shall become null and void with the cash deposit forfeited to the GOVERNMENT. The Concession & Investment Commission shall release said cash deposit within two (2) years after the Effective Date provided that the CONCESSIONAIRE shall have fulfilled all the requirements and obligations of this Agreement.

- 2) The CONCESSIONAIRE shall, within a period of two (2) years after the Effective Date, spend a sum not less than \$120,000 (Dollars One hundred and twenty thousand) on the survey development, production and other operations required under this Agreement and shall and at the request of GOVERNMENT produce all pay-rolls, receipts, invoices and other documents necessary to demonstrate the spending of the said sum.

#### 9. PROCESSING OF TIMBER AND OTHER FOREST PRODUCTS

The CONCESSIONAIRE shall comply with the requirements of the Minister of Agriculture regarding the percentage of total production to be sawn or otherwise processed in Liberia and shall ensure that by the end of the year 1975 not less than sixty percent (60%) of the total production shall be so processed and that by the end of 1976 not less than eighty percent (80%) shall be so processed and they by the end of 1977 the entire production of logs shall be so processed in Liberia.



10. GOVERNMENT INSPECTION

Any person or persons authorized by the Minister of Agriculture or by any other competent GOVERNMENT authority shall be entitled at all reasonable times to enter into and upon any part of the premises of the CONCESSIONAIRE and to inspect:

- (i) the CONCESSIONAIRE's activities and operations under this Agreement for the purpose of ensuring full compliances with the provisions of this Agreement;
- (ii) in the offices of the CONCESSIONAIRE the records of the CONCESSIONAIRE's relating to its activities and operations under this Agreement in order to determine the accuracy of reports rendered by the CONCESSIONAIRE;
- (iii) the boundaries and delineations of the Concession Area and
- (iv) the quantity, quality and type (including species and variety) of timber and timber products being harvested transported processed and marketed under this Agreement.

**ARTICLE II OPERATIONS OF THE CONCESSIONAIRE**

1. Management Plan

The CONCESSIONAIRE shall operate in accordance with the Management Plan approved by the Minister of Agriculture, which plan shall form part of this Agreement.

2. Trees under Minimum Diameter not to be cut for Commercial Use

- 1) The CONCESSIONAIRE shall not cut nor fell for commercial use any growing tree the diameter of which at breast height is smaller than the dimension set forth for respective species in Section 30 of Sub-Chapter C (Restrictions on use of National Forest Products of Chapter 1 of Title 24 Natural Resources Law) of the Liberian Code of Laws of 1956.
- 2) The CONCESSIONAIRE shall be subject to the penalties set forth in Section 30 of the Sub-Chapter C of Chapter 1 of Title 24 for any violations of that Section 30.
- 3) After consultation and approval by a Forest Officer (as defined in Title 24) the CONCESSIONAIRE may cut any tree irrespective of girth limits if such tree is to be used for construction purposes necessary to the CONCESSIONAIRE'S operations and activities under this Agreement. The CONCESSIONAIRE shall comply with Section 30 (f) of Sub-Chapter C of Chapter 1 of Title 24.

3. Selection and Exploration of Timber Harvesting Tracts; Relinquishment of Tracts

- 1) Selection of timber harvesting tracts shall be in accordance with the following provisions:
  - a) The CONCESSIONAIRE shall within the Concession Area

select contiguous harvesting tracts having a total area not exceeding that authorized in the Management Plan provided for in Article II Section 1 hereof.

- b) Six (6) months after the commencement of exploitation, the CONCESSIONAIRE may select further timber harvesting tracts which shall be consistent with the Management Plan provided for in Article 2 Section 1 of this Agreement.
  - c) Additional timber harvesting tracts may be selected at the end of each further period of six (6) months provided that the area of selected unexploited timber harvesting tracts shall not exceed the area provided for in the Management Plan.
  - d) The CONCESSIONAIRE shall not, without first obtaining the consent of the Minister of Agriculture, fell and extract merchantable timber from another timber harvesting tract until it has completely felled and extracted all merchantable timber from the timber harvesting tract where it was last operating.
  - e) The CONCESSIONAIRE shall give at least one month's notice in writing of its intention to terminate its felling operations in a timber harvesting tract and to commence felling operations in another tract.
  - f) The CONCESSIONAIRE shall, on the conclusion of the exploitation of any timber harvesting tract, clear the boundaries of that tract of all debris resulting from the CONCESSIONAIRE'S operations within that tract.
- 2) A timber harvesting tract in which the CONCESSIONAIRE has, to the satisfaction of the Chief, Bureau of Forest Conservation, completed exploitation shall revert to GOVERNMENT on completion of such timber harvesting activities

within that tract provided also, however, that the CONCESSIONAIRE, in the opinion of the Chief, Bureau of Forest Conservation has fulfilled or is fulfilling in a satisfactory manner the requirements for reforestation as defined in Article VIII Section 2 hereof.

- 3) The selection of timber harvesting tracts shall be made by filing with the Ministry of Agriculture descriptive statements in triplicate of the tracts selected setting forth their boundaries and areas by appropriate overlays to maps and or aerial mosaic photographs acceptable to the GOVERNMENT.
- 4) The CONCESSIONAIRE'S rights to exploit timber and other forest products within the selected timber harvesting tracts shall be established upon the filing of the above-mentioned maps and descriptive statements and the approval of such maps and descriptive statements by the Minister of Agriculture. Such approval shall not be unreasonably denied nor unreasonably delayed.
- 5) The CONCESSIONAIRE shall, within thirty (30) days from the date of approval by the Minister of Agriculture of the tracts to be harvested, provided the Minister of Agriculture with a planimetric map or maps covering the selected tracts.
- 6) After filing the above-mentioned maps and descriptive statements, the CONCESSIONAIRE shall place durable boundary marks not less than three (3) feet high and which can be easily recognised, at the vertices of the angles of respective tracts, unless these vertices be in lands covered by water or of difficult access. In such cases reference monuments may be established at favourable points indicating the location of such vertices by arrows giving the bearings and the distances. The above-mentioned map

shall also show the geographical marks such as rivers, mountains, towns, counties, states or other known boundaries.

Should there be any permanently marked government survey station located within six (6) miles of the respective tracts such Government survey station shall be connected with the points shown on said map and its direction and distance from said points on the map shall be shown.

- 7) The tracts may be located anywhere within the Concession Area.
- 8) The GOVERNMENT and the CONCESSIONAIRE recognise that certain tracts lying within the Concession Area of the Land described in this Agreement may not contain timber of either quantity or quality to permit economic timber and forest products extraction operations contemplated in this Section 3. Such tracts shall upon their determination be relinquished to the GOVERNMENT and in the event that GOVERNMENT should offer the said tracts out on concession as salvage areas, the CONCESSIONAIRE shall be granted a right of first refusal in respect of them.

#### 4. Measurement and Marking of Trees and Logs

- 1) The CONCESSIONAIRE shall not move or cause to be moved any log from the place at which such log was cut until and unless the same shall have been measured and the log and the stump of the tree from which the log was cut have been hammer-marked with a hammer of the GOVERNMENT by a duly authorized agent of the GOVERNMENT.
- 2) The property mark or marks to be used for the Concession Area the subject of this Agreement shall be:

ARTICLE III    OTHER RIGHTS OF THE CONCESSIONAIRE

1. a.    Occupation of Surface and Easements

- 1) Subject to the provisions of this Agreement, the CONCESSIONAIRE shall have the right to enter and occupy any land within the Concession Area for the purpose of undertaking operations and activities under this Agreement. Provided, however, that with regard to land within the Concession Area which is privately owned, the CONCESSIONAIRE shall comply with the provisions of Sub-Section (4) below.
- 2) Subject to the provisions of Sub-Sections (3) and (4) below, the CONCESSIONAIRE shall have the right to occupy and utilize for the duration of this Agreement or of a lesser period, the surface of such suitable areas outside the Concession Area as may be necessary for the construction and operations of roads, ports, railways and pipelines necessary for its activities and operations under this Agreement.
- 3) With regard to public lands lying outside the Concession Area, the CONCESSIONAIRE shall apply to the GOVERNMENT for the right to use such land. The right to use such land shall not be unreasonably denied by GOVERNMENT. The CONCESSIONAIRE shall apply to use such public lands by making application to the Minister of Agriculture who shall conclude with the CONCESSIONAIRE the terms and conditions under which the easement or other rights may be exercised, including the annual land rental to be charged.
- 4) With regard to private lands lying either within or without the Concession Area, the CONCESSIONAIRE may, in the event that it is unable to reach satisfactory agreement with the private owner or owners as to the terms on which it may

enter and occupy the land in question, bring the matter to the attention of the Minister of Agriculture by filing a petition. Such petition shall set forth the facts of the case and shall specify as exactly as possible:

- (i) the land which it requires
- (ii) the name or names of the owners and/or occupants of the land if this can reasonably be ascertained;
- (iii) the type of occupancy lease, right-of-way, or easement which the CONCESSIONAIRE seeks.

The Minister of Agriculture shall issue a notice to the owners and occupants of the land to present themselves on a day and at a time to be specified therein.

Such day shall not be more than sixty (60) days or less than thirty (30) days from the date of said notice. On the appointed day the Minister of Agriculture or his representative shall hear the CONCESSIONAIRE and the owners and occupants of the land and, after considering proofs and arguments on both sides, shall determine and assess the amount to be paid to the owners and/or occupants of the land for loss of the right to use the land for the period of the lease right-of-way or easement and for damages arising out of the loss or destruction of goods and property because of rights granted to the CONCESSIONAIRE. In the event of any dispute as the nature and extent of the interests in or ownership of the land or the amount of compensation payable by the CONCESSIONAIRE or if the decision of the Minister of Agriculture or of his representative is unacceptable to any of the parties concerned, the case may be brought before court of competent jurisdiction in Liberia. In such case, the CONCESSIONAIRE may file an indemnity bond, in an amount designated by the Minister of Agriculture and may enter upon the land immediately subject to later determination by the court of competent

jurisdiction of the exact amount payable.

- 5) Provided, however, that no lease, right-of-way or easement shall be granted if it substantially interferes with operations of another previously granted concession and provided further than nothing in this Agreement shall be construed to permit interference with any tribe, village, person or group of persons or of any rights to timber or forest produce held by any tribe, village, person or persons through law or custom.
- 6) No blasting or other dangerous operations may be conducted within half (½) a mile of any public works or permanent building without the previous consent of the GOVERNMENT and subject to such conditions as it may impose.

## 2. Accessory Works and Installations

- 1) Subject to the provisions of Article III Section 1(4) and the prompt payment of adequate compensation to any person whose rights are thereby affected and to the approval of the appropriate authority, the CONCESSIONAIRE shall have the right to construct, maintain, alter and operate:
  - a) industrial buildings and installations including processing facilities, mills, loading and punping stations, warehouses, storage places and storage tanks;
  - b) (Subject to the prior approval in writing from the Minister of Agriculture) wharves, shipping terminals, ports or port sites;
  - c) means of communications, including telephone lines and wireless stations;
  - d) facilities for shipping and aircraft;



- e) living accommodations and amenities, including hospitals, schools and recreational facilities, for the CONCESSIONAIRE's employees and workmen;
  - f) other buildings, installations and works necessary or useful for the effective carrying out of the CONCESSIONAIRE's operations and activities under this Agreement.
- 2) The construction of any railroad or electric power generating facilities shall require the prior approval of the Minister of Agriculture and/or other appropriate Agency of Government, which approval shall not be unreasonably denied. The CONCESSIONAIRE shall submit the proposed plans for such railroad or electric generating facility to the Minister of Agriculture or other appropriate Agency of Government.
- 3) In the case if lands required for sidings, stations, yards and other rail transportations installations, the right-of-way of the CONCESSIONAIRE's railroads shall be in accordance with rules laid down by the Minister of Agriculture or other appropriate Agency of Government.

3. Right to Take and Use Water

Subject to the approval of the Minister of Agriculture previously obtained in writing and to such conditions ( other than conditions imposing a charge for the use of the water) as he may impose, the CONCESSIONAIRE may appropriate and use free of charge, any water found within the Concession Area and any water within the public domain within (3) miles of the Concession Area for purposes necessary or useful to the CONCESSIONAIRE's operations and activities under this Agreement. Provided,

however, that the CONCESSIONAIRE shall not deprive any lands, villages, houses or watering places for animals of a reasonable supply of water in so far as such water has, through customs, been utilized for such lands, villages, houses or animals. Nor shall CONCESSIONAIRE interfere with any rights of water enjoyed by any persons under the Land and Native Rights Ordinance.

4. Right to Take and Use Gravel, Sand, Clay or Stone

Subject to the approval of the Minister of Agriculture previously obtained in writing and to such conditions as he may impose, the CONCESSIONAIRE may appropriate and use, free of charge, gravel, sand, clay or stone found within the Concession Area for purposes necessary or useful to the CONCESSIONAIRE's operations and activities under this Agreement. Provided, however, that such gravel, sand, clay or stone shall be sold only with the prior approval of the Minister of Agriculture and subject to such conditions as he may impose (including conditions relating to fees to be paid to the GOVERNMENT and provided further that upon termination of this Agreement any excavation shall be filled in or leveled and left by the CONCESSIONAIRE as far as may be reasonably practical in its original condition and if so required by the Minister of Agriculture, fenced or otherwise safeguarded as circumstances may require.

5. Agents or Independent Contractors

The CONCESSIONAIRE may exercise any of the rights and powers conferred by this Agreement (save where the context otherwise requires) through agents or independent contractors. Provided, however, that the CONCESSIONAIRE may not, through the employment of agents or independent contractors, avoid any of its

obligations or liabilities under this Agreement as provided  
in Article IV Section 3 Sub-section (5) hereon.

**ARTICLE IV    REPORTS, RECORDS, NOTICES, AND COMMUNICATIONS**

**1. Reports Concerning Surveys, Exploitation and Development**

- 1) The CONCESSIONAIRE shall keep the Minister of Agriculture fully informed, through quarterly reports beginning with the first quarter following the Effective Date of this Agreement, as to the progress and results of the CONCESSIONAIRE's survey and development operations and activities under this Agreement. Such reports shall include:
  - a) the results of any general reconnaissance of the various sites of proposed operations and activities under this Agreement;
  - b) information concerning the selection of routes for roads or railways from the harvesting area to a suitable harbour for the export of timber or other forest products;
  - c) information concerning the planning of suitable sawmills and/or woodworking installations and town sites, including information of suitable water supplies for the town sites and other facilities;
  - d) such other plans and information as to the progress of operations of the Concession Area as the Minister of Agriculture may from time to time reasonably require.
  
- 2) The CONCESSIONAIRE shall furnish to the Minister of Agriculture a monthly statistical report beginning with the first month following the commencement of the exploitation period which shall set forth the number and location of the timber harvesting tracts on which work was begun during the preceding month, the number of workmen employed thereon at

the end of the month, a list of the equipment at the working site at the end of the month and a brief description of the work in progress at the end of the month and of the work contemplated during the following month.

- 3) The CONCESSIONAIRE shall furnish to the Minister of Agriculture monthly reports beginning with the first month following the commencement of the exploitation period concerning the progress of its harvesting operations under this Agreement. This report shall specify in full the work accomplished during the month in question, including the total volume of timber lumber and other forest products produced species by species, broken down between:
  - a) volumes harvesting, expressed in board-feet;
  - b) volumes transported from the Concession Area and their corresponding destination;
  - c) volumes stockpiled at the Concession Area or elsewhere in Liberia;
  - d) volumes sold or committed for export (whether actually shipped from Liberia or not);
  - e) volumes actually shipped from Liberia (with full details as to purchaser, destination and terms of sale);
  - f) volumes processed and/or manufactured within Liberia with full specifications as to the intermediate products, by-products, or final products, turned out within Liberia (with full showing as to the disposition of such intermediate products, by-products or final products and of the terms on which they were disposed of.)
  
- 4) The CONCESSIONAIRE shall furnish to the Minister of Agriculture an annual report beginning with the first complete year following the commencement of the exploitation period which shall include:

the number and description of timber harvesting tracts with were exploited at the end of the year preceding the year in question (with a showing as to which are in commercial production); the number and description of tracts on which work was begun during the year and which were placed in

commercial production during the year; the number and description of tracts abandoned during the year; the production of such of the tracts, regardless of whether in commercial production or not, with a full description of the kind, quality and analysis.

- 5) The CONCESSIONAIRE shall also furnish the GOVERNMENT all other information of whatever kind which the latter may request in order that the GOVERNMENT may be fully appraised of the CONCESSIONAIRE's timber harvesting and other activities.
- 6) Monthly and quarterly reports shall be submitted in quadruplicate within thirty (30) days of the end of the month or quarter in question, as the case may be. Annual reports shall be submitted in quadruplicate within ninety (90) days of the end of the year in question.
- 7) Other reports to the GOVERNMENT shall be submitted in accordance with Article IV Section 2 hereunder.

2. Other Reports to GOVERNMENT and Records to be maintained

- 1) With respect to the CONCESSIONAIRE's obligation to pay a tax on net income or to furnish full information during a tax exemption period, the CONCESSIONAIRE shall submit to the Minister of Finance such information and documents as are required by the Revenue and Finance Law.
- 2) With respect to the CONCESSIONAIRE's obligation to pay a surface rent and stumpage fee, the CONCESSIONAIRE shall submit such information and documents as are required in Article V Sections 2 and 3 hereof to the Minister of Agriculture.

- 3) With respect to the CONCESSIONAIRE's survey and exploitation operations, the CONCESSIONAIRE shall submit such information and documents as are required in Article IV Section 1 hereof to the Ministry of Agriculture.
- 4) In addition, the following shall be delivered to the Ministry of Planning and Economic Affairs:
  - a) True copies of all sales, management, commercial and financial agreement concluded with Affiliates and independent parties and all other agreements concluded with Affiliates, to be submitted within one month after conclusion.
  - b) Copies of the monthly reports detailed in Article IV Section 1 Sub-Section (3) hereof.
- 5) All information furnished to the GOVERNMENT shall be in English. All financial data shall be recorded in Liberian currency.
- 6) The CONCESSIONAIRE shall maintain all original records and reports relating to its activities and operations under this Agreement including all documents relating to financial and commercial transactions with non-Affiliates and Affiliates in its principal offices in Liberia. These records and reports shall be opened to inspection by GOVERNMENT through an authorized representative during normal working hours. Such records and reports shall be maintained in the English Language and all financial data shall be recorded in Liberian currency.
- 7) Copies of all reports submitted to Ministries of GOVERNMENT shall be forwarded to the Concession Secretariat.

3. Local Resident Managers: Notices

- 1) The CONCESSIONAIRE shall, before commencing operations under this Agreement, furnish to the Minister of Agriculture the name and address of the local resident manager under whose supervision the CONCESSIONAIRE intends to carry on

the operations under this Agreement. Any changes in the name or address of the manager or other supervising person shall likewise be given to the Minister of Agriculture within fourteen (14) days of such change.

- 2) If there are co-participants in this Concession, the name and address of the manager or person under whose supervision the co-participants intend to carry on the operations under this Agreement shall be furnished to the Minister of Agriculture as set forth in Sub-Section (1) above. Such manager or supervising person shall be considered the representative of all such co-participants for any purpose concerning this Agreement.
- 3) Notices for the purpose of this Agreement shall be sufficiently served if delivered or sent by registered post.
  - a) in the case of GOVERNMENT, to the Minister of Agriculture,
  - b) in the case of the CONCESSIONAIRE, to the manager or other person whose name shall have been given by the CONCESSIONAIRE under Sub-Section (1) and Sub-Section (2) of this Section.
- 4) Provided, however, that all notices, requests or other communications required by, provided in for, or relative to, this Agreement shall be in writing. Cables and telegrams shall be considered as written communications but they shall be confirmed by registered letter and shall be considered effective only when said registered letter has been actually received.
- 5) And provided also that the CONCESSIONAIRE may not through the employment of agents or independent contractors, avoid any of its obligations or liabilities under this Agreement and provided furthermore that the records of the agent or independent contractor shall be available to GOVERNMENT inspection as provided for in Article IV Section 2 Sub-



Section (6) and Article I and Section 10 hereof.

4. Reports to be confidential; Cost of Reports

- 1) Any information supplied by the CONCESSIONAIRE shall (except with the consent in writing of the CONCESSIONAIRE, which shall not unreasonably be withheld) be treated by all persons in the service of the Government of Liberia as confidential, but GOVERNMENT shall nevertheless be entitled at any time to make use of any information received from the CONCESSIONAIRE for the purpose of preparing and publishing aggregated returns and general reports on the extent of timber and forestry operations in Liberia and for the purpose of any arbitration or litigation between GOVERNMENT and the CONCESSIONAIRE.
- 2) All records, reports, surveys, plans, maps, charts, accounts and information which the CONCESSIONAIRE is or may be from time to time required to supply under the provisions of this Agreement shall be supplied at the expense of the CONCESSIONAIRE.

**ARTICLE V FISCAL OBLIGATIONS**

**1. Government Tax on Net Income; Accounting Principles**

- 1) The CONCESSIONAIRE shall pay a tax on its net income deriving from its operations and activities under this Agreement in accordance with the income tax laws of general application on, provided, however, that the tax payable shall not exceed fifty percent (50%) of the said net income in any one year and provided also that for a period of five (5) years commencing on the date of first marketable production as determined by GOVERNMENT, no tax shall be paid on any income, earnings or profits retained by the CONCESSIONAIRE for expansion of its operations or for investment or re-investment in Liberia and not distributed in any way to shareholders, employees, affiliates or others as dividends, bonuses, gratuities or in any other form except with the written approval of GOVERNMENT obtained before any such distribution takes place. And provided, furthermore, that after the expiry of the above-mentioned five-year period the CONCESSIONAIRE may retain up to twenty (20%) of any net profits in each year for investment or re-investment within Liberia and this amount shall be exempted from income tax provided that GOVERNMENT approves in writing the intended investment or re-investment before the CONCESSIONAIRE so invests or re-invests it.
  
- 2) In determining the net income of CONCESSIONAIRE, generally accepted accounting principles shall be employed and all payments, deductions, charges for expenses and other items will be reasonable and consistent with general practices being followed in projects of similar nature. Provided, however, that where more than one accounting practice is found by GOVERNMENT to be applicable with regard to any

one item, GOVERNMENT shall determine which practice is to be applied with regard to that particular item.

- 3) In no event shall GOVERNMENT be bound by the CONCESSIONAIRE's characterization of any transaction with an Affiliate for accounting purposes. In the event that GOVERNMENT finds that any payment deduction, charge for expenses or other transaction with an Affiliate is not fair, reasonable and consistent with the general practice that would have been followed by independent parties in connection with a transaction of a similar nature, GOVERNMENT may, for the propose of determining the CONCESSIONAIRE'S income tax liability, substitute the payment, deduction, charge for expenses or other transaction which would have prevailed had the transaction occured between independent parties.
- 4) During the five-year period of exemption from income tax provided for in Sub-Section (1) hereof, the CONCESSIONAIRE shall file with GOVERNMENT full information returns on earnings, income and profits, and thereafter, the CONCESSIONAIRE shall file complete income tax returns. The CONCESSIONAIRE shall comply with the provisions set forth in Sub-Chapter C of Chapter 3 of the Revenue and Finance Law, Title 35 of the Liberian Code of Laws of 1956 as now written or, if amended or replaced, with the law in effect in the taxable year, in the form and content of such returns, the submission to GOVERNMENT for review, the payment of income taxes as assessed, the inspection of records, the keeping of accounts, the payment of penalties and interest, and other matters relating to the administration of the CONCESSIONAIRE's income tax obligations to GOVERNMENT.

## 2. Surface Rent

- 1) The CONCESSIONAIRE shall, in respect of the Concession

granted hereunder, pay to GOVERNMENT an annual surface rent of 10 cents per acre or prorata for part thereof for all land held by the CONCESSIONAIRE during the term of this Agreement. No rental shall be paid for land relinquished in accordance with the relevant provisions of Article II, Section III, hereof after the effective date of relinquishment.

- 2) The rental imposed by Sub-Section (1) of this Section shall be paid to the Ministry of Finance of the Government, through the Ministry of Agriculture.
- 3) The CONCESSIONAIRE shall pay the rental imposed by Sub-Section (1) of this Section semi-quarterly in advance. The first payment for the period extending from the effective date of this Agreement shall be made within one month of the effective date. Subsequent payments shall be made annually in advance on the first day of January of each year.

### 3. Stumpage Fees

- 1) In addition to the surface rental referred to in Section (2) of this Article V the CONCESSIONAIRE shall pay to GOVERNMENT a fee in keeping with existing rules and regulations governing the harvesting of timber for the local market or for export as specified under the Forest Law and in accordance with measurements carried out as provided for in the official scaling regulations of the Bureau of Forest Conservation (except on unusable timber removed to permit road building).
- 2) The CONCESSIONAIRE shall pay to GOVERNMENT fees in accordance with Sub-Section (1) of this Section 3 in respect of merchantable timber which, in the opinion of the Minister

of Agriculture, should have been extracted from a timber harvesting tract in which the CONCESSIONAIRE has ceased to work (after due notice has been given as provided in Article II Section 3 hereof) but which timber has been left standing or felled but not removed within the said timber harvesting tract.

- 3) Payment of such stumpage fees shall be monthly and not later than thirty (30) days after the end of the month in question. Payment shall also be in accordance with the rules and regulations promulgated by the Minister of Finance pursuant to Section 683 of the Revenue & Finance Law and Section 36 of the Executive Law.
- 4) Notwithstanding Sub-Sections (1) and (2) above, the CONCESSIONAIRE may fell and use without payment any tree for the purposes of constructing such roads, bridges, wharves, railways, buildings, mills and other structures shall remain in site and shall become the property of GOVERNMENT on the termination of this Agreement, in accordance with Section 6(1) of Article X of this Agreement.
- 5) With regard to any forest product other than timber which the CONCESSIONAIRE may wish to harvest, the CONCESSIONAIRE shall pay such fee as mutually agreed upon by the parties to this Agreement in advance.

#### 4. Duties and Excises

##### 1. a) Import Duties

The CONCESSIONAIRE shall be subject to the customs regulations in force, to any consular fees of general application for use of ports, harbours, wharves or other services or facilities made available by the GOVERNMENT, subject to the following exemptions:-

- 1) The importation into Liberia during the first five (5) years after the Effective Date by the CONCESSIONAIRE of any equipment, machinery or similar items of a capital nature having a useful life of five (5) years or more for use in the harvesting, processing, transportation and marketing of timber and timber products under this Agreement;
  
- ii) Tires and replacement parts for such trucks, trailers and heavy equipment as the CONCESSIONAIRE shall have detailed in a list filed with an approved by the Minister of Agriculture; sufficient office equipment as approved by the Minister of Agriculture as being adequate for the initial setting-up of the CONCESSIONAIRE's office; drugs, equipment furnishings for the installation of a hospital, dispensaries or clinics which the CONCESSIONAIRE needs for the exercises of its rights and obligations under this Agreement and any other items which GOVERNMENT may from time to time approve.
  
- b) Provided, however, that all such items to be exempt from duties shall be exempted only if items reasonably comparable in price are not obtainable in Liberia. In comparing the prices of the items sought to be imported with like items obtainable in Liberia, there should be added to the price of the items sought to be imported duty-free the consular fees, freight and insurance and other costs (other than import duties) normally incurred throughout the time imported items have been shipped to and landed in Liberia, and cleared through Liberian Customs. If the difference in price does not exceed the amount of import duties and if within (30) days after notice by the CONCESSIONAIRE the GOVERNMENT has agreed to pay to the CONCESSIONAIRE such difference then the items available in Liberia shall

be considered competitively priced. All items imported duty-free shall, as far as possible, be marked with the name or marks of the CONCESSIONAIRE in a manner difficult to delete. If the CONCESSIONAIRE imports any items duty-free and thereafter determines to sell or transfer such item to another person not entitled to the same exemption, or to apply the item to a non-exempt purpose, a customs declaration shall be made before such sale, transfer or use in accordance with the Liberian Laws of general application. Any disagreement as to whether items qualify for exemption from import duties, or as to whether items have been sold, transferred, used or applied so as to become subject to import duties shall be resolved under the generally applicable Liberian Laws, regulations and procedures.

- c) With regard to industrial fuel oils and fuel for industrial vehicles, the CONCESSIONAIRE shall be entitled to a rebate of the excise tax imposed on the sale of such fuel oils upon submission of a statement prepared in accordance with the regulations established by the Ministry of Finance.

## 2. Excise Taxes

The CONCESSIONAIRE may for a period of five (5) years commencing from the date of first marketable production as determined by the GOVERNMENT export logs and processed timber free of customs and other duties but subject to such other levies and similar taxes that may be imposed from time to time. The exportation of such logs and processed timber shall be subject to customs and other regulations then in force, except as herein provided, and subject to the GOVERNMENT's rights of supervision and inspection of such exportation.

**ARTICLE VI CAPITALIZATION, STOCK PURCHASES, DIRECTORS, FINANCE**

**1. Capitalization**

1) The CONCESSIONAIRE shall provide all capital at such times and in such amounts as may be required for the economic and profitable development of the Concession and for all the operations and activities under this Agreement. Such capital may be in the form of paid-in capital funds and/or borrowings from non-Affiliates. For the purposes of this Sub-Section, the term "Affiliates" shall have the meaning attributed to in Article I Section 1.

**2) Stock Purchases**

- a) Commencing with the first issue of any voting shares of the CONCESSIONAIRE and continuing thereafter with respect to all subsequent issues of shares, twenty-five percent (25%) of each issue of such shares issued for sale or proposed to be issued by the CONCESSIONAIRE shall be reserved for offer to Liberian citizens. Such initial offering and such successive offering to Liberians shall be made on terms no less favourable than the most favourable terms to other subscribers and held available for subscription by and purchase by said Liberian citizens for a period of six (6) months from the date of offering of such particular issues.
- b) The obligation to keep available twenty-five percent (25%) of each successive issue of common shares for subscription and/or purchase by Liberian citizens shall not at any time be minimized or affected by the fact that at the date of any particular issue of shares there already exist shareholders of the CONCESSIONAIRE who are Liberian citizens.



The CONCESSIONAIRE shall submit reports to the Ministry of Planning and Economic Affairs of the number of shares of each offer which initially were made available to Liberian citizens, the number of shares remaining unsubscribed or paid at the end of the corresponding six-month period and the number of such shares subsequently disposed of to the existing shareholders in favour of existing Liberian shareholders. These shares shall retain with them the proportionate pre-emptive rights in favour of Liberian holders thereof who from time to time subscribe to and purchase additional shares when and if offered by the CONCESSIONAIRE.

- c) The holdings by Liberians of shares of the CONCESSIONAIRE shall in no event be treated less favourably than those of other holders. Liberian citizens shall be permitted to exercise their right to hold shares in any and every offering made by CONCESSIONAIRE. The CONCESSIONAIRE shall give the widest possible news media advertisement in Liberia to the public offer to Liberian citizens herein required and shall do nothing to diminish the relative voting strength of the Liberian shareholders.
- 3) Directors, Twenty-five percent (25%) or not less than two (2) of the directors of the CONCESSIONAIRE shall be Liberian citizens. Action taken by and votes of these directors shall not have the effect of altering the obligations of the CONCESSIONAIRE or the rights of GOVERNMENT under this Agreement.

## 2. Finance, Approved Indebtedness, Debt to Equity Ratio

- 1) **Approved Indebtedness** An Indebtedness shall be considered an Approved Indebtedness if it fulfils the conditions of (1) (a) and either (1) (b) or (1) (c) hereof and interest

payable on such indebtedness shall be allowable as a deduction from profits before the calculation of income tax or of net profits before distribution.

- a) An Approved Indebtedness shall not:
- (i) be directly or indirectly junior to any other indebtedness or part of any other indebtedness of the CONCESSIONAIRE nor:
  - (ii) be guaranteed by any Affiliate of the CONCESSIONAIRE nor by any other person nor:
  - (iii) be incurred for the purpose of re-financing at then existing indebtedness.
- b) An Approved Indebtedness is that indebtedness incurred by the CONCESSIONAIRE to a public bank or other public financial institution acceptable to GOVERNMENT and which does not bring the total of such Approved Indebtedness to a debt to equity ratio exceeding 2:1.
- c) An Approved Indebtedness is that indebtedness incurred by the CONCESSIONAIRE to a public bank or other public financial institution acceptable to the GOVERNMENT which brings the total of such Approved Indebtedness of the CONCESSIONAIRE to a debt to equity ratio exceeding 2:1 but which has been approved by GOVERNMENT in writing before it was incurred by the CONCESSIONAIRE solely in connection with the acquisition or construction of the plant and equipment or the infrastructure unless otherwise approved in writing by the GOVERNMENT.
- 2) For the purposes of this Section, the equity of the CONCESSIONAIRE shall be that amount of capital actually paid in to the CONCESSIONAIRE for capital stock, plus the principal amount of any outstanding indebtedness which is not Approved

Indebtedness, less any accumulated deficit of the CONCESSIONAIRE. There shall be added to the equity of the CONCESSIONAIRE any contributed surplus and any retained earnings but only to the extent that such surplus or earnings have been restricted so that they are not legally available for distribution to the shareholders. If property other than cash has been contributed to the CONCESSIONAIRE for capital stock, the amount thereof to be taken into account shall not exceed the cost of such property to the transferer.

- 3) A Non-Approved Indebtedness is an indebtedness the interest on which shall not be allowable as a deduction from profits before the calculation of income tax. An indebtedness shall be deemed to be a non-approved indebtedness if it:
- a) is incurred by the CONCESSIONAIRE to a public bank or other public financial institution acceptable to the GOVERNMENT but has not been approved by GOVERNMENT as an Approved Indebtedness or;
  - b) is incurred by the CONCESSIONAIRE to an organization or person or persons other than a public bank or public financial institution acceptable to the GOVERNMENT notwithstanding that:
    - c) 1) the CONCESSIONAIRE is required by the GOVERNMENT to identify clearly the sources of any money loaned to the CONCESSIONAIRE or otherwise transferred or made available to him by such organizations or person or persons and to obtain the written authorization of GOVERNMENT for such loan or transfer before completing the transaction involved.

ARTICLE VII    **EMPLOYMENT CONDITIONS**

1. Health and Safety of Employees

- 1) The CONCESSIONAIRE shall install and utilize such internationally recognized modern safety precautions as are provided and observed also where under conditions and operations comparable to those undertaken by the CONCESSIONAIRE under this Agreement.
- 2) The CONCESSIONAIRE shall likewise observe internationally recognized modern measures for the protection of the general health and safety of its employees and all other persons having legal access to the area covered by this Agreement. The CONCESSIONAIRE shall comply with such instructions as may from time to time be given in writing by the Bureau of Forest Conservation.
- 3) The CONCESSIONAIRE shall furnish such free medical care and attention to all its employees and to all Government officials working in connection with the operations of the CONCESSIONAIRE in the area covered by this Agreement as is reasonable and shall establish, staff and maintain a dispensary which shall be reasonably adequate in the circumstances. Provided, however, that whenever the CONCESSIONAIRE employs more than one hundred fifty (150) labourers in any one region it shall maintain a hospital headed by a medical doctor.
- 4) The Workmen's Compensation Law of the Republic of Liberia shall apply to accidents occurring to employees of the CONCESSIONAIRE.

2. Education

The CONCESSIONAIRE shall provide free of charge primary and secondary school facilities and education for the children of all employees and of all Government officials working in connection with the CONCESSIONAIRE's operations in the Concession Area; rules, regulations and standards established by the Ministry of Education shall be followed.

3. Personnel: Use of Local Labour: Applicability of Labour Law

- 1) The CONCESSIONAIRE shall not import unskilled labour for carrying out any operations or activities under this Agreement except in the event that the local labour supply becomes inadequate to the CONCESSIONAIRE's needs. In such latter event, the CONCESSIONAIRE shall undertake to import only such foreign unskilled labour as shall be acceptable to the Ministry of Labour and Youth.
- 2) Subject to the foregoing restrictions and to any applications of the Liberian Immigration Law, all persons deemed by the CONCESSIONAIRE to be required for the prosecution of its operations and activities under this Agreement shall have right to enter and reside in the Republic of Liberia and to depart therefrom.
- 3) In selecting any employees to carry out its operations under this Agreement the CONCESSIONAIRE shall give preference to competent and qualified Liberian citizens.
- 4) No officer or employee of the CONCESSIONAIRE who is not a native of Liberia (even though he may for the time being be a resident of Liberia) shall be subject to the payment of any direct tax not levied or imposed upon permanent residents of Liberia. Subject to the foregoing, the payment

of income tax to the GOVERNMENT by any such offices or employee of the CONCESSIONAIRE shall be governed by the income tax laws of Liberia in force in the taxable year and to the provisions of any treaty or agreement in respect of double taxation as may be concluded between GOVERNMENT and the Government of any country of which such officer or employee is subject or citizen.

- 5) The CONCESSIONAIRE shall conform with the provisions of the Labour Law in effect during the term of this Agreement or of any extension or renewal thereof.

#### 4. Training of Liberian Citizens

- 1) The CONCESSIONAIRE shall provide for the training of Liberian in order to qualify them for technical or administrative posts in the CONCESSIONAIRE's operations and activities in Liberia. The minimum number of Liberian employed in technical and administrative positions shall, within five (5) years of the commencement of operations under this Agreement, reach at least seventy five percent (75%) of the total number of persons employed in such positions and shall within ten (10) years from the date of commencement of operations under this Agreement, reach at least ninety-five percent (95%) of the total number of persons employed in such positions by the CONCESSIONAIRE in Liberia
- 2) The CONCESSIONAIRE shall provide for the training of Liberians in order to qualify them for supervisory and senior managerial posts. The minimum number of such Liberians employed in supervisory and managerial posts shall reach ninety percent (90%) within ten (10) years from the date of commencement of operations under this Agreement.

**ARTICLE VIII    OTHER OBLIGATIONS OF THE CONCESSIONAIRE**

1. Disposal of Wastes; Avoidance of Pollution

The CONCESSIONAIRE shall provide for the proper disposition of saw-dust, mill and other waste so as to avoid the pollution of rivers, streams and other waterways and to prevent such wastes from becoming a nuisance or injurious to persons and property.

2. Reforestation by CONCESSIONAIRE

- 1) The CONCESSIONAIRE shall carry out or cause to be carried out such reforestation practices and measures as will ensure the perpetual use of the forest within the Concession Area. Such reforestation practices shall be in accordance with generally accepted silviculture methods and practices and shall be in accordance with the rules and regulations from time to time made by the Bureau of Forest Conservation.
- 2) The CONCESSIONAIRE shall make such technical studies and research in co-operation with and as required by the Bureau of Forest Conservation and will contribute as required to the development of optimum technical standards of reforestation practices.

3. Prevention of Damage to Concession Area

The CONCESSIONAIRE shall use all reasonable efforts to prevent encroachment by unauthorized persons into the Concession Area and to prevent damage to trees and other forest products except trees and other forest products which the CONCESSIONAIRE may fell or extract under the terms of this Agreement.

**4. GOVERNMENT's and Third Parties' Rights to use CONCESSIONAIRE's Facilities**

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- 1) The CONCESSIONAIRE shall:
  - a) transport the passengers and carry the freight of the GOVERNMENT and all mail of the public and GOVERNMENT on its railroads to the extent that such transport and carriage does not unduly prejudice not interfere with the CONCESSIONAIRE's operations hereunder;
  - b) transport the passengers and carry the freight of third parties on its railroads to the extent that such transport and carriage does not unduly prejudice nor interfere with the CONCESSIONAIRE's operations hereunder. Provided, however, that the transportation and carriage of such third party passengers and freight shall be on such reasonable terms and at such reasonable charges as the CONCESSIONAIRE may impose;
  - c) allow the public and GOVERNMENT to use free of charge any roads constructed and/or maintained by the CONCESSIONAIRE, provided, however, that such use shall not unduly prejudice nor interfere with the CONCESSIONAIRE's operations hereunder;
  - d) allow the public and the GOVERNMENT to use the CONCESSIONAIRE's wharf and harbour facilities on such reasonable terms and reasonable charges as the CONCESSIONAIRE shall impose. provided, however, that such use shall not unduly prejudice the CONCESSIONAIRE's operations hereunder.
  - e) allow the GOVERNMENT and third parties to have access over the Concession Area provided that such access does not amount to encroachment as provided for in Section 3 hereof and does not unduly prejudice nor



interfere with the CONCESSIONAIRE's operations hereunder;

- f) allow the GOVERNMENT to place, free of charge at its own expense, telegraph and/or telephone wires on the poles of the lines of the CONCESSIONAIRE, provided that such installation do not unduly interfere with the CONCESSIONAIRE's efficient use of such poles and lines;
- g) allow the GOVERNMENT and third parties to explore for and exploit minerals and other substances within the Concession Area, as provided for in Section 2 Article 1 hereof.

5. Scientific Exploitation; Protection against Waste and Negligence

- 1) The CONCESSIONAIRE shall carry on all its operations and activities under this Agreement in accordance with good timbering practices and in accordance with modern and accepted scientific technical principles applicable to timber and forestry operations and processing. All operations and activities under this Agreement shall be conducted so as to avoid waste and loss of natural resources, to protect natural resources against damage and to prevent pollution and contamination of the environment. Production shall not be restricted to the exploitation of particular species of trees except to the extent explicitly provided in this Agreement.
- 2) The CONCESSIONAIRE shall take all necessary measures to prevent or control fires and shall notify immediately the proper governmental authorities of any fires that may occur.

- 3) The CONCESSIONAIRE shall take the necessary measure to prevent damage to the rights and property of GOVERNMENT and third parties. In the event of negligence or carelessness on the part of the CONCESSIONAIRE or its agents or of any contractor carrying on operations or activities for the CONCESSIONAIRE under this Agreement, they shall be liable for such injuries in accordance with the laws of the Republic of Liberia generally applicable.

#### 6. Shipping Preference

In engaging any ship for the transportation of logs, timber or processed products under this Agreement, the CONCESSIONAIRE shall give preference to ships in the following order:

- (i) ships owned by the Liberian Government;
- (ii) ships owned by citizens of Liberia;
- (iii) ships owned by shipping companies owned by Liberian citizens;
- (iv) ships registered in Liberia.

Provided, however, that such preference shall be given only if the rates of such are competitive with prevailing market rates. For the purpose of this Section, the term "ship" shall include any vessel suitable for the shipping of logs, timber or processed products under this Agreement.

#### 7. Savings of Rights of GOVERNMENT and others

- 1) Nothing in this Agreement shall be deemed to limit the right of GOVERNMENT or of authorized parties to explore for and exploit minerals or other substances in the Concession Area or generally to limit the rights of GOVERNMENT or any other authority of person in the Concession Area except as expressly provided herein. Provided, however, that CONCESSIONAIRE's operations and activities under this

Agreement shall not be unduly interfered with nor its rights prejudiced.

- 2) The GOVERNMENT reserves the right to take from the Concession Area such timber and forest products as may be required for public purposes and issue casual felling permits to natives to take forest product for their own use or for use in connection with any native art or craft.

**ARTICLE IX    LAWS AND PENALTIES**

**1. Governing Law**

This Agreement shall be governed, construed and interpreted only in accordance with the laws of the Republic of Liberia.

**2. Laws of General Application**

Unless specifically provided herein to the contrary, the CONCESSIONAIRE, its shareholders and employees and all persons dealing with any of them shall be subject to all Liberian Laws of general application. No person shall be deemed or is intended to be a third party beneficiary under this Agreement unless specific provision to that effect is contained herein.

**3. Compliance with Forestry Law. Penalties for Offences**

- 1) The CONCESSIONAIRE shall comply with the provisions of the general Forestry Law (Liberia Code of Laws of 1956, Title 24, Chapter I and II) as they are from time to time in effect.
- 2) The CONCESSIONAIRE shall be subject to penalties for offences against Title 24 of the Liberian Code of Laws 1956 as provided in said Law.

**4. Penalty for Breach of Agreement**

Unless otherwise specifically provided and notwithstanding the GOVERNMENT's right of revocation under Section 3 Article X hereof, the penalty for any breach of this Agreement shall be damages which shall be fixed by agreement or if agreement cannot be reached, then damages or specific performance as fixed by the arbitral tribunal.

**5. Prohibited Transactions**

The CONCESSIONAIRE shall not, directly or indirectly engage in:

- a) any transaction with respect to timber products produced with any State which the GOVERNMENT has by law or by official pronouncement declared to be hostile or unfriendly or
- b) any transaction prohibited by law.

**6. Indemnification**

The CONCESSIONAIRE shall at all times indemnify and hold the GOVERNMENT and its officers and agents harmless from all claims and liabilities for death or injury to persons or damage to property from any cause whatsoever arising out of the CONCESSIONAIRE's operations or activities hereunder or as a result of the CONCESSIONAIRE's failure to comply with any law or regulation.

**ARTICLE X FORCE MAJEURE; CONCILIATION AND ARBITRATION;  
GOVERNMENT'S POWER OF REVOCATION FOR CAUSE;  
TERMINARION**

**1. Force Majeure**

- 1) Failure on the part of the CONCESSIONAIRE or of the GOVERNMENT to fulfill any or the terms and conditions of this Agreement other than CONCESSIONAIRE'S obligations to make payments of money, shall not give either party to this Agreement any claim against the other party or be deemed to be a breach of the Agreement insofar as such failure arises Force Majeure.
- 2) If, through Force Majeure, the fulfillment by the CONCESSIONAIRE of any terms and conditions on this Agreement be delayed, the period of such delay shall be added to the periods fixed by this Agreement.
- 3) The party failing to fulfill the terms and conditions of this Agreement because of Force Majeure shall give notice in writing of such Force Majeure as soon as possible after the occurrence to the other party.
- 4) For the purposes of this Section, the term "Force Majeure" shall be interpreted according to the definition given the term under international law. Provided, however, that only such loss, damage or injury as could not have been avoided by the taking of proper precautions, due care or such reasonable alternative measures as aforesaid shall be regarded as the consequences of any failure caused by Force Majeure.
- 5) Any party who fails because of Force Majeure to perform its obligations hereunder shall, upon the cessation of the Force Majeure, take all reasonable steps within its powers

to make good and resume, with the least possible delay, compliance with those obligations.

## 2. Conciliation and Arbitration

- 1) If at any time during the continuance of this Agreement or thereafter there shall be any question or dispute with respect to the construction, meaning or effect of this Agreement or arising out of this Agreement or concerning the rights or obligations hereunder, the parties shall have the right to require the dispute to be settled by conciliation and arbitration as hereinafter provided. Any of the parties to such dispute may commence conciliation or arbitration proceedings by giving notice to the other party and to chief justice.
- 2) The decision of the arbitrators shall be final and binding upon the parties to this Agreement and upon any person who participated as a party in such arbitration proceedings and they shall comply in good faith with the decision.
- 3) Notwithstanding anything else in this Agreement to the contrary, any dispute concerning the proper application or interpretation of Liberian laws of general application (including without limitation any regulations, orders, decrees or procedures pursuant to such laws) whether or not such laws are expressly made applicable by the provisions of this Agreement shall in no event be subject to arbitration. Such disputes shall be resolved solely in accordance with the administrative and judicial procedures provided by Liberian Law.

## 3. Government Power of Revocation for Cause; Procedure for Termination

- 1) In the event that:

- a) the CONCESSIONAIRE fails to commence operations as required in Sub-Section (1) of Section 8 Article I hereof or fails to meet its expenditure obligations within the period specified in Sub-Section (2) of Section 8, Article I hereof, or;
- b) no commercial shipment of logs, timber or timber products is made within one and one half (1½) years of the effective date of this Agreement, or;
- c) Any rent, stumpage fee or income tax payable by the CONCESSIONAIRE under this Agreement shall be in arrears or unpaid for a period of six (6) calendar months or;
- d) the CONCESSIONAIRE assigns to a third party the whole or part of the rights held by it under this Agreement without the previous consent of the GOVERNMENT as provided in Section 6 of Article I hereof, or;
- e) the CONCESSIONAIRE has knowingly submitted to GOVERNMENT any false statements which were a material consideration for the execution of this Agreement, or;
- f) the CONCESSIONAIRE fails to comply with any final decision of the arbitral tribunal in a controversy arising between GOVERNMENT and the CONCESSIONAIRE;
- g) the CONCESSIONAIRE intentionally extracts any natural resource other than timber and other forest products without express authorisation by the GOVERNMENT, or;
- h) There is any other breach or non-observance by the CONCESSIONAIRE of any of the terms, obligations or conditions of this Agreement, or any law of Liberia not superseded by this Agreement, or;
- i) The CONCESSIONAIRE makes or enters into any agreement



for composition with its creditors or goes into liquidation whether compulsory or voluntary (other than for the purpose of reconstruction) or if a receiver is appointed:

then the GOVERNMENT may, subject to the provisions of this Section, revoke this Agreement.

- 2) a) In the event that GOVERNMENT deems it desirable to revoke this Agreement pursuant to Sub-Section (1) above for any breach of non-observance by the CONCESSIONAIRE of any term, obligation or condition of this Agreement, the GOVERNMENT shall give to the CONCESSIONAIRE notice in writing specifying the particular breach or non-observance complained of and requiring the CONCESSIONAIRE within three (3) calendar months of such notice (or within such extended time as may seem fair to the Minister of Agriculture having regard to the circumstances of the particular case) to remedy the same or make reasonable compensation to the GOVERNMENT in a manner acceptable to the Minister of Agriculture.
- b) If the CONCESSIONAIRE shall fail to comply with said notice the Minister of Agriculture may, after the expiration of said three (3) calendar months or extended time, revoke this Agreement provided, however, that if:
  - 1) the CONCESSIONAIRE disputes whether there has been any failure to comply with any term, obligation or condition hereof, and
  - ii) such dispute is arbitrable under Section 2 of Article X hereof, and
  - iii) the CONCESSIONAIRE has within the period of three (3) months or extended time referred the dispute to arbitration and has thereafter diligently prosecuted its claim thereunder,

then the GOVERNMENT shall not terminate this Agreement except as the same be consistent with the terms of the arbitration award.

- 3) Upon termination of this Agreement by the GOVERNMENT, every right of the CONCESSIONAIRE hereunder shall cease (save as specifically otherwise provided hereunder) but subject nevertheless and without prejudice to any obligation on liability imposed or incurred under this Agreement prior to the effective date of termination and to such rights as GOVERNMENT may have under law.

#### 4. Non-Waiver

The failure of either party at any time to require performance by the other party of any provisions hereunder shall in no way affect the party's rights to enforce any of the other provisions of this Agreement; nor shall the waiver by either party of the breach of any provisions hereof be taken or held to a waiver of any subsequent breach of such provision or as a waiver of the provision itself.

#### 5. Approval and Consents to be Reasonable

Any approvals and consents required under the terms of this Agreement (whether or not expressed to be at the discretion of any individual or governmental authority) shall not be unreasonably withheld nor granted subject to conditions which are unduly onerous or discriminatory against the CONCESSIONAIRE.

#### 6. Removal of Property at Termination

- 1) Upon the expiration or earlier termination of this Agreement or any part thereof and of any extensions or removals

thereof, the CONCESSIONAIRE shall leave in good and safe running order, all fixed assets such as buildings, roads, railroads, airstrips, harbours and docks constructed by the CONCESSIONAIRE under this Agreement and the same shall revert to GOVERNMENT.

- 2) All plants and equipment and moveable assets necessary to the continued operation under this Agreement shall be offered by the CONCESSIONAIRE for sale to the GOVERNMENT at the book values shown in the CONCESSIONAIRE'S accounts, after depreciation. In the event that GOVERNMENT fails to exercise such right of purchase within ninety (90) days of the termination of the Concession, the CONCESSIONAIRE may remove all such plants and equipment and moveable assets.
  
- 3) Subject to any claims which the GOVERNMENT may have against the CONCESSIONAIRE, arising under this Agreement or otherwise, all normal stockpiles and other liquid assets used by the CONCESSIONAIRE in connection with its operations and activities under this Agreement shall remain the property of the CONCESSIONAIRE and may be freely withdrawn, exported, sold or otherwise disposed of, subject to the controlling Liberian Revenues and Finance Law, provided, however, that the GOVERNMENT shall have the right of first refusal to purchase at a fair price to be determined between the parties any such stockpiles or other liquid assets. In the event that GOVERNMENT fails to exercise such right of purchase within ninety (90) days after the termination of the Concession, the CONCESSIONAIRE may remove such a stockpile and other liquid assets.

IN WITNESS WHEREOF, the parties hereto have hereunto set their hands affixed their signatures on the day and year first above written.

IN THE PRESENCE OF:

FOR THE GOVERNMENT OF THE  
REPUBLIC OF LIBERIA:

\_\_\_\_\_

\_\_\_\_\_  
MINISTER OF AGRICULTURE

\_\_\_\_\_

\_\_\_\_\_  
CHAIRMAN, CONCESSION COMMISSION

FOR THE CONCESSIONAIRE:

\_\_\_\_\_

\_\_\_\_\_

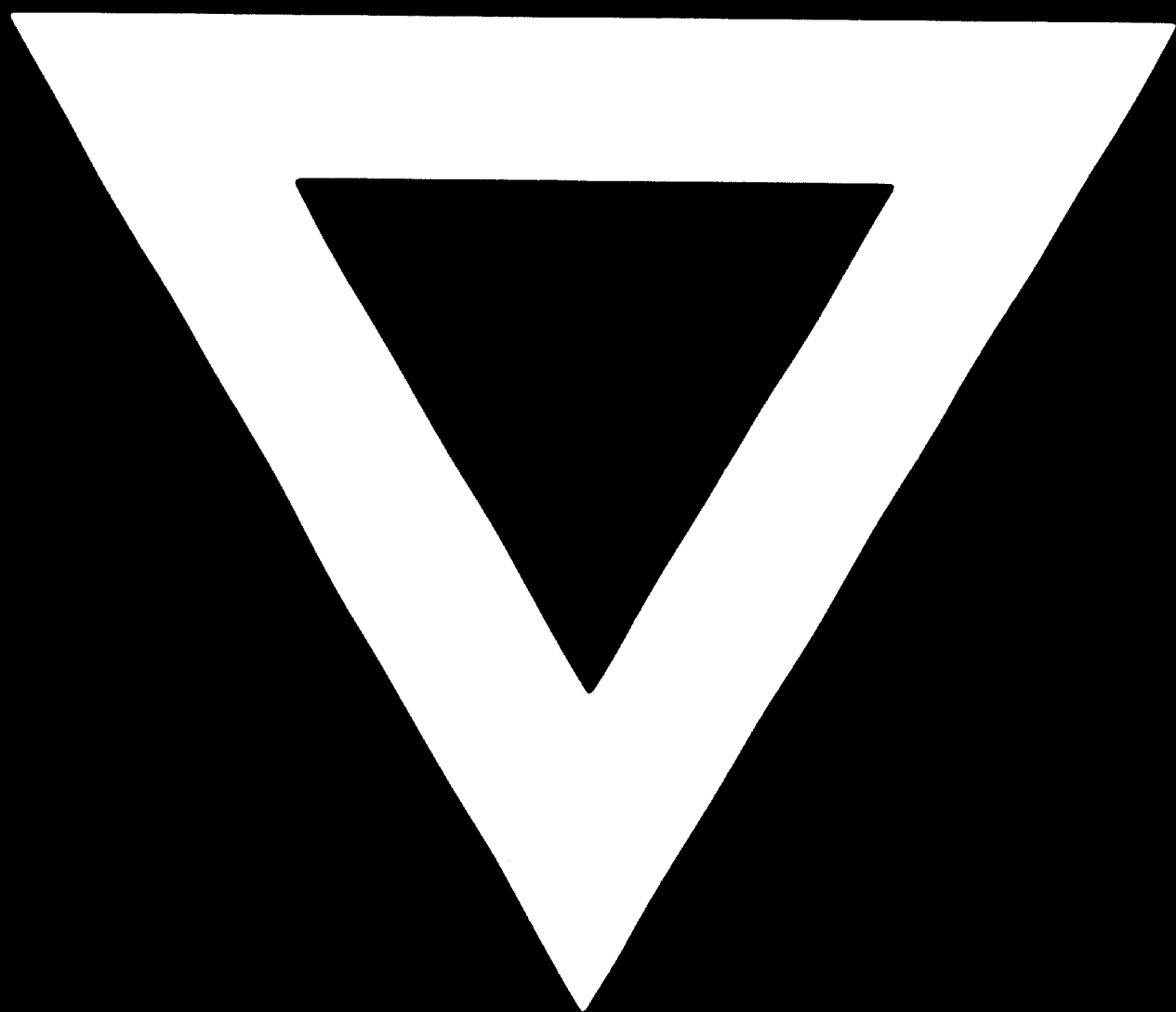
Approved by the President of Liberia:

\_\_\_\_\_ 197\_\_  
(Date of Approval)

Ratified by the Legislature:

\_\_\_\_\_ 197\_\_





**76. 05. 20**