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SIERRA LEONE

Technical report: Proposals for action on industrial development in Sierra Leone*

Prepared for the Government of Sierra Leone
by the United Nations Industrial Development Organization,
acting as executing agency for the United Nations Development Programme

Based on the work of A.D. Monteiro, CTA
and the team of project DP/SIL/83/001

United Nations Industrial Development Organization
Vienna

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Explanatory Notes

Exchange rate: 2.5 Le (Leone) = 1 US$

Measures: 1 acre = 0.405 ha (hectare)
1 ha = 2.471 acres

Abbreviations:

BADEA	Bank Arabe Developmente Economic Afrique
ECU	European Currency Unit
EDF	European Development Fund
EEC	European Economic Community
F.E.	Foreign exchange
IEIDC	Industrial Estates, Investments and Development Corporation
MFC	Mabole Fruit Processing Company
IFC	International Finance Company
SIS	Special Industrial Services

Abstract

This report on proposals for action on industrial development in Sierra Leone was prepared as one of the outputs of project DP/SIL/83/001 - Industrial Development Promotion and Planning. It offers proposals for identified industrial projects, which are in accordance with the objectives for economic development of the country. Based on the current situation in the manufacturing sector and in accordance with the country's development strategy, proposals for a rehabilitation programme, the development of resource-based industries, small-scale industries and handicraft activities as well as proposals for infra-structural activities to foster industrial development, are made.

Selected requests for technical assistance to prepare pre-feasibility studies are founded by job descriptions respective terms of reference.

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INTRODUCTION

The contribution of the manufacturing sector together with small-scale and handicraft establishments at 4.6% to the G.D.P. in 1981 was one of the lowest in Africa. It is estimated that the sector provides employment to about 10% of the employed labour force. Significantly it is the small-scale and handicraft establishments which are more important as they account for 95% of the employment and 50% of the value added in manufacturing.

RECOMMENDATIONS

A. Rehabilitation Programme

1. Rehabilitation of Palm Oil Mills

There are two medium-scale and seven small-scale (Pioneer) palm oil mills in the country. The medium-scale mills are supported by 12,000 acres of palm plantations and the small-scale mills are supported by 13,000 acres of plantations. All the mills are partially operative because of lack of spare parts, working capital and indifferent management expertise. All the units are in the public sector.

The two medium sized mills are offered for privatization with minority Government participation. Negotiations are in progress in this respect.

The Government is now proposing that the seven small-scale (Pioneer Mills) be assisted for rehabilitation and subsequent privatization. In the first phase only three mills are proposed to be rehabilitated with the help of grants. The total cost of rehabilitating the three mills is estimated at US$416,000 which will save US$600,000 a year in foreign exchange and assist in reducing the substantial vegetable oil deficits in Sierra Leone. When the mills are privatized, the value of rehabilitated mills will be Government's equity.

2. Rehabilitation of Mabile Fruit Processing Co. (MFC)

The MFC is lying idle for over three years because of poor financial control, inexperienced management and lack of adequate and appropriate raw materials. Recent new plantations in the area are expected to yield more than adequate fruits to keep the factory fully operational. The farmers had planted the fruit trees in anticipation of demand from the factory.

The Government is now proposing that the MFC may be rehabilitated either through an outright grant and/or long-term loan or equity participation and subsequently privatized. Rehabilitation programme is estimated to require $630,000 for equipment and $490,000 for technical assistance.

3. Relocation and Rehabilitation of Integrated Fish Meal Company

This is an excellent and fairly new facility with 1,000 tons cold storage, 40 tons chill room with a generator and fish meal making equipment lying idle because of poor management and inappropriate location.

The investment can be substantially retrieved if the essential facilities can be re-located to a more suitable location.

Initial consultancy to prepare a proposal with detailed costing for relocation and rehabilitation and subsequent private equity participation and management support is required.

B. Resource-Based Industries

1. Sugar Industry

There is one cane sugar manufacturing company with a production capacity of 7,000 tons per year and the potential to increase it to 12,000 tons with additional balancing equipment.

The present demand for sugar estimated at 29,000 tons per year is expected to reach 37,000 tons in 1995. The shortfall between supply anddemand is estimated to increase from 22,000 tons now to 30,000 tons in 1995.

The Government is considering capacity increase to 12,000 tons in the existing mill and establishing a new mill in the private sector to meet the domestic demand. A Feasibility Study prepared by the Commonwealth Fund for Technical Co-operation has established the viability of installing a factory with an initial capacity of 15,000 tons of sugar production with a built-in facility to expand it to 25,000 tons.

The total investment estimated is US$36 million, of which $12 million will be equity. It is proposed that 60% of the equity will be offered to private investors.

Technical assistance needed is US$1.8 million to initiate this project. Loans for machinery, equipment etc. will be of the order of $22.2 million.

2. Fish Smoking Units.(4)

Sierra Leone has an actual coastline including bays and estuaries close to 600 kms. The marine catch of Sierra Leone within the 200 mile exclusion zone is estimated at 120,000 tons with a sustainable yield of 70,000 pelagic fish while another 42,000 tons of demersel can also be obtained annually on a sustainable basis.

In view of the high local demand for smoked fish, the Ministry of Trade and Industry had organised a Feasibility Study to be prepared by the Commonwealth Secretariat. The Feasibility Study has established the viability of a fish smoking unit with a capacity of 1 ton to 1.5 ton of smoked fish output for 12 hours.

The total cost of the project is estimated at US$300,000 per unit, of which $68,000 is for buildings and $83,000 for working capital, which can be locally met.

Lines of credit for machinery and equipment of US$200,000 for each unit, making a total of $800,000 for 4 units would be required. Furthermore, technical assistance for US$16,000 for each unit making a total of $64,000 is requested. These figures based on 1983 prices may have to be updated to reflect inflation.

3. Stone Cutting and Processing

Most of the building materials are imported into Sierra Leone. However, the country has abundant supplies of rich building stones which can easily be substituted for cement and rods which are imported. Therefore, at the request of the Ministry of Trade and Industry, the UNIDO prepared a Feasibility Study to set up a commercially operated pilot stone processing unit in Sierra Leone. The total cost of the project is estimated at US$182,000 at 1982 prices, of which US$115,000 is for equipment. The Government is requesting a grant of US$150,000 (at 1985 prices) in terms of equipment. The pilot project will be managed by the private sector and the Government will have a minority equity participation.

C. Small-Scale and Handicraft Activities Development "Growth Centres"

The Government has prepared a programme to assist small-scale and handicraft establishments through a "Growth Centre" programme. It is essentially a grass-root development programme wherein the people themselves, with the help of extension workers and stimulators plan their own development and implement it. Aid agencies, are being requested to provide simple equipment and initial raw materials to initiate

prospective small entrepreneurs in business. The value of equipment and raw materials will be paid back into a community account and will form a "Revolving Fund". to be be managed by the local community and to be used to assist other entrepreneurs.

A proposal to initiate the Growth Centre programme in 4 areas is submitted for EDF financing as a Pilot Programme beginning July 1985. The Government proposes that every District (12 in total) will have a Growth Centre each involving an initial two year outlay of $350,000.

Multilateral or bilateral agencies are requested to adopt one or a group of Districts to initiate this programme.

D. Infrastructure

Technology and Design Development Centre

Lack of facilities to develop new designs for small machines and equipment and adapt imported machines to local factory endowments are serious handicaps for grass-root industrial development in the country. Therefore, the Ministry of Trade and Industry has decided to establish a Technology and Design Development Centre in the country in collaboration with the Engineering Faculty of the University of Sierra Leone.

The Centre will initially include the facilities needed for a Bureau of Standards.

A detailed proposal has to be prepared with the help of a Consultant at an estimated cost of US$100,000 from aid agencies.

The total estimated cost of the project over a period of 3 years is $1.5 million in foreign exchange. However, this is subject to revision by the proposed Consultant's Report.

2. Industrial Estates, Investments and Development Corporation

The Government proposes to prepare a Feasibility Study to suggest an institutional framework to undertake the functions of industrial development such as developing industrial estates, providing term finance, maintaining a raw material bank etc. The institution is expected to be run on commercial basis with equity from commercial banks, insurance companies, private organisations, individuals and international financing and aid agencies.

E. Request for Technical Assistance to Prepare Selected Prefeasibility Studies

1. Agricultural Implements and Post-Harvest Storage Equipments

The Government requests assistance to undertake a Prefeasibility Study on the manufacture of appropriate agricultural implements and post-harvest storage equipment in the country.

2. Oil-Bearing Crops and Seeds For Industrial Utilization

Assistance is requested to prepare a Study on growing and processing of oil bearing crops and seeds to meet local demand.

3. Development of Indigenous Textile Industry

Except very small-scale production of country cloth through indigenous 6" wide looms, all other fabrics are imported in thecountry. Government is now requesting assistance to prepare a programme to develop indigenous textile industry.

4. Programme for Small-Scale Paper and Pulp Industry

There is no paper industry in Sierra Leone, though the demand for various types of paper ranges between 3500-4000 tons. The Government is requesting assistance to prepare a programme to set up a paper mill using local agricultural waste as raw material.

INDUSTRIAL DEVELOPMENT INVESTMENT PROGRAMME

I. Expenditures in US$ | II. Sources of Funds

	1985/86 Year I	1986/87 Year II	1987/88 Year III	TOTAL	Domestic Expenditure	Domestic Equity	External Loans	External Grants	External Equity
A. Rehabilitation Programme									
1. Rehabilitation of Palm Oil Mills	195,034	221,166	- - -	416,200	- - -	- - -	- - -	416,200	- - -
2. Rehabilitation of MPC	560,100	560,100	- - -	1,120,200	- - -	- - -	- - -	490,000	630,200
3. Relocation and Rehabilitation of Integrated Fish Meal Company	220,000	- - -	- - -	220,000	20,000	- - -	- - -	200,000	- - -
Sub-total	975,134	781,266	- - -	1,756,400	20,000	- - -	- - -	1,106,200	630,200
B. Resource-based Industries									
1. Sugar Manufacture	1,800,000	17,100,000	17,100,000	36,000,000	- - -	4,800,000	22,200,000	1,800,000	7,200,000
2. Fish-smoking Units (4)	320,500	641,000	320,500	1,282,000	- - -	384,640	817,360	80,000	- - -
3. Stone cutting	91,000	91,000	- - -	182,000	47,000	20,000	- - -	115,000	- - -
Sub-total	2,211,500	17,832,000	17,420,500	37,464,000	47,000	5,204,640	23,017,360	1,995,000	7,200,000
C. Small Industry Development - Growth Centre Programme	950,000	3,050,000	2,300,000	6,300,000	600,000	- - -	- - -	5,700,000	- - -
D. Industrial Infrastructure									
1. Technology and Design Development Centre	10,000	329,000	1,297,000	1,636,000	78,000	- - -	- - -	1,558,000	- - -
2. Industrial Estates, Investments and Development Corporation	15.000	- - -	- - -	15,000	1,000	- - -	- - -	14,000	- - -
Sub-total	25,000	329,000	1,297,000	1,651,000	79,000	- - -	- - -	1,572,000	- - -
E. Technical Assistance to Prepare Selected Pre-feasibility Studies for:									
1. Agricultural implements and post harvest storage equipment	30,000	- - -	- - -	30,000	2,000	- - -	- - -	28,000	- - -
2. Oil-bearing crops and seeds and their industrial utilization	30,000	- - -	- - -	30,000	2,000	- - -	- - -	28,000	- - -
3. Development programme for indigenous textile industry	40,000	- - -	- - -	40,000	2,000	- - -	- - -	38,000	- - -
4. Development programme for pulp and paper industry	23,000	- - -	- - -	23,000	2,000	- - -	- - -	21,000	- - -
Sub-total	123,000	- - -	- - -	123,000	8,000	- - -	- - -	115,000	- - -
TOTAL	4,284,634	21,992,266	21,017,500	47,294,400	754,000	5,204,640	23,017,360	10,488,200	7,830,200

Situation and Problems in the Manufacturing Sector

The performance of the sector during the last 4—5 years has been constrained by the general climate of economic stagnation as well as difficulties of obtaining adequate foreign exchange from official sources for the importation of raw materials and spare parts. It may be noted that the modern factory type establishments are predominantly import substitution activities satisfying the consumer needs of the urban and rural elite and operate on imported raw materials, spare parts and fuel. The nagging foreign exchange crisis has paralysed these units creating a situation of idle capacity resulting in acute shortage of consumer goods and erratic price increases. The few resource based industries are also in a limbo of inactivity due to the shortage of foreign exchange to import essential spare parts.

The erratic power supply from the National Power Authority as a result of the frequent mechanical failures of the decades old and poorly maintained generating sets has accentuated the idleness in the whole spectrum of industrial establishments in the country.

Though the small-scale and handicraft establishments have a preponderant importance in respect of value added, employment, decentralized operation and minimal use of scarce foreign exchange in the Manufacturing Sector they have so far not received the attention they deserve from the national authorities as well as bilateral and multilateral aid agencies. The main problems of these establishments are antiquated production techniques with no scope of exposure to improved designs and modern methods of production, lack of marketing outlets beyond their area of operation, absence of commercial financing or institutional financing facilities and lack of opportunities for training to upgrade their traditional skills through institutional facilities or extension services.

Development Strategies and Policies

The basic policy of the Government on the ownership of industrial establishments was enunciated by the Minister of Trade and Industry on 7th October 1982 in a speech delivered at the Conference on "Private Sector Participation in Economic Development of Sierra Leone". He said -

> "the Government has neither the financial resources nor the manpower to establish and run industrial enterprises. Unless such an exercise is imperative either for the security of the country or for the greater national good, the Government will not directly involve in manufacturing activities. The Government will encourage and promote private sector and will promote policies, strategies and incentives to facilitate private investments in industries".

The Development of Industries Act 1983 passed into law by the Parliament in September 1983 has codified the incentives and guarantees provided by the Government for investors in industrial enterprises in the country.

The establishments eligible for incentives and guarantees are classified as follows:-

1) export-oriented, resource based industries;

2) resource based industries catering to local demand;

3) building materials industries;

4) export-oriented industries partly based on imported materials and services; and

5) import-substitution industries with capacity to save or earn foreign exchange and producing domestic value added measured in world market prices exceeding 30% of the finished products value.

Guarantees:

Any industrial enterprise approved under the Development of Industries Act shall be fully protected and secured against nationalization except in the interest of national security and subject to the payment of prompt, fair and adequate compensation.

Incentives

The projects approved under the Development of Industries Act 1983 shall be entitled to the following incentives:-

1) preferential treatment with respect to the granting of import licences;

2) partial or total exemption of customs duty payable on capital equipment, raw materials or intermediate goods;

3) relief by way of capital allowance as follows:-

a) initial allowance of 25% of the cost of machinery and equipment;

b) 10% of the cost of machinery and equipment per year for the duration of the tax holiday period not exceeding five years;

c) investment allowance of 16% of the cost of the project;

d) relief from surtax to be determined, for a period not exceeding 5 years, and total surtax relief not exceeding 150% of the original capital investment;

e) relief from income tax to be determined, but for a period not exceeding five years and total income tax relief not exceeding 150% of the original capital invested.

Guarantees For Foreign Capital

Industrial establishments having foreign participation with foreign investment will be permitted proportionate repatriation of profits or dividends every year subject to exchange control regulations. When foreign investors liquidate their assets they will be accorded similar facilities.

The national objectives of industrialization may be broadly summarized as follows:-

a) initiating and sustaining a process of rapid industrial growth;

b) mobilizing domestic and foreign resources and technology for industrial development;

c) generating substantial employment opportunities;

d) establishing backward linkage effects towards raw material development and local processing; and

e) developing entrepreneurial, managerial and labour skills.

The alleviation of poverty, contribution to the satisfaction of the basic needs of the people and assisting in reducing income disparities between persons, communities and regions are also important objectives of industrialization in the country.

On-Going Development Projects

The most important on-going UNDP-project in the industrial sector is the UNIDO-executed project DP/SIL/83/001 - 'Industrial Development Promotion and Planning'.

This is basically in institution-building project at the Ministry of Trade and Industry coupled with direct assistance to the Ministry and industrial plants and providing assistance in implementing a development programme for small-scale and handicraft industries. This project will be operational until June 1986.

The main achievements of this project are:

a) creation of an awareness with policy makers that industrial development is an important pre-requisite for the overall economic development of the country;

b) establishment of an Industrial Development Department in the Ministry of Trade and Industry to undertake industrial planning, prepare prefeasibility studies, promote the establishment of industries, identify operational problems in industries and provide technical assistance in solving the problems;

c) preparation of a "Growth Centre Programme" to assist in the promotion of handicraft and small-scale industries. This programme will initially cover four areas and is expected to be financed by the European Development Fund to the extent of US$1.4 million;

d) **preparation of feasibility studies for cane sugar, fruit and vegetable processing, smoked fish and urena lobata which were done by the Commonwealth Fund for Technical Co-operation;**

e) diagnostic studies of industrial units having productivity and capacity utilization problems were undertaken in order to facilitate direct assistance at the establishment level for their rehabilitation.

A. REHABILITATION PROGRAMME

1. Rehabilitation of the Existing Palm Oil Mills

Sierra Leone is a traditional oil palm growing country. It is estimated that wild palm trees which are accessible for harvesting are of the order of 60,000 acres but are widely dispersed and therefore suitable for rural cottage oil extraction purposes.

In addition to the above, there are 40,000 acres of regular oil palm plantations with commercial oil extracting mills. Two of these are fairly large sized mills and the others are small mills called Pioneer Mills.

In spite of this potential for palm oil extraction, the country has been experiencing a crisis in the production of red palm oil which is a basic food item for the people of Sierra Leone. In view of the importance of this industry the Government of Sierra Leone requested UNIDO to undertake a diagnostic study of the palm oil industry in the country. This project financed by the Special Industries Services (SIS) fund of UNIDO has identified specific problems in different units and suggested specific corrective measures. The findings of this study has assisted the Government to initiate negotiations to offer the two main mills to private sector participation and management and to work out a direct assistance programme to the small-scale mills to rehabilitate them.

The main findings of the Diagnostic Study are:-

a) Two organised palm oil mills namely Gambia-Mattru and Daru have a total crushing capacity of 20 tons of fresh fruit bunches per hour with a total palm plantation support of just over 12,000 acres.

b) Both the mills were partially operative because of the lack of spare parts, working capital and indifferent management expertise.

The above mills owned by the Government are now being privatized.

In addition to the above, the country has 9 Pioneer palm oil mills of which two have completely stopped operation. The remaining 7, owned by the Government are partially operative. One mill at Masanki is administered by the Prisons Department.

All the Pioneer mills are manufactured by the same foreign company. The design and technology is simple. They do not require sophisticated maintenance. However, poor factory management and neglect of the farm sector as well as shortage of working capital have rendered these mills only partially operative. These mills have a total plantation facility of 13,000 acres.

Though the mills were established between 1934 and 1954, they can still be rehabilitated and it is visualized that most of the spare parts required can be locally fabricated in the National Workshop, which being the former Railway Workshop is reasonably well equipped.

Rehabilitation Proposal For The Pioneer Mills

The Government is now proposing that the seven pioneer oil mills be assisted for rehabilitation and subsequent privatization. The proposed rehabilitation would involve both agriculture and industry. The raw material supply on a continuous basis is important if the industrial sector is to operate on a sustained basis. Therefore, it is proposed that modernization of the palm plantations and the rehabilitation of the mills should be an integrated activity.

During the first phase, it is proposed to rehabilitate three pioneer mills and simultaneously take steps to upgrade the palm plantations (in co-operation with the Ministry of Agriculture and Natural Resource) by introducing scientific farming practices and developing nurseries or obtaining seedlings from other agencies to replace the old and less productive trees.

The expected project outputs are the following:

If the three pioneer mills are rehabilitated and reactivated during the first phase, the local staff will be trained in proper management and maintenance in the process and the following benefits are likely to accrue during the first phase:

1) increase in the total production of the three mills from the present estimated 675 tons to 2,700 of red palm oil per year to help in decreasing the shortage of palm oil in the country. If all the seven mills are rehabilitated subsequently their palm oil production will increase from the estimated 1,575 tons currently to 6,300 tons at the end of the rehabilitation period;

2) there will be an estimated saving of Leones 1.5 million in foreign exchange per year if the three mills are rehabilitated and Le3.5 million foreign exchange savings if the 7 mills are rehabilitated.

To rehabilitate the three mills, the following assistance is required:

	US Dollars		
	Total	1st Operation Year July 1985 to June 1986	2nd Operation Year July 1986 to June 1987
Spare parts for 3 oil mills	250,000	83,334	166,666
Repair tools/tackles	5,000	5,000	-
Project vehicle (4-wheel drive pick-up)	12,000	12,000	-
Short-term Expert (6 m/m)	55,200	55,200	-
Middle Level Operators (3 x 24 m/m = 72 m/m)	90,000	37,500 (30 m/m)	52,500 (42 m/m including leave)
Operation and maintenance of project vehicle	4,000	2,000	2,000
Total	416,200	195,034	221,166

2. Direct Assistance to the Mabole Fruit Processing Company (MFC)

Under the UNIDO's SIS Programme, the Mabole Fruit Processing Company, which was lying idle for over 2 years was taken up for diagnostic analysis. The Report, which is with the Government now, as suggested measures to rehabilitate the unit with direct private sector participation and management.

The main reasons for the closure of the factory are summarized as follows:-

1) poor financial control by the National Development Bank which is a public sector institution and owned the factory and so was responsible for the disbursement of funds;

2) inexperienced management;

3) lack of adequate and appropriate raw materials;

4) poor packaging and marketing system

All the above shortcomings can be rectified. It is reliably reported that by the end of 1985, in the area covered by the Northern Integrated Agricultural Development Programme 30,000 trees of improved citrus variety will be yielding annual fruit crops in excess of 4,200 tons. This is more than sufficient to satisfy the raw material requirements of Mabole Fruit Company on a two shift basis during the season. It is also established that other fruits like pineapples, guavas and tamarinds are available in sufficient quantities to run the factory economically.

In view of the above, it is proposed that the National Development Bank rehabilitates the Mabole Fruit Company by obtaining experienced management through technical assistance and requesting funds from the UN Capital Development Fund or any other suitable agency for the purchase of additional capital equipment, rehabilitation of existing plant and buildings and to provide adequate working capital. Once the factory is rehabilitated and set on firm footing it may be offered for sale to private investors by suitably drawing up a prospectus for sale and circulating to interested parties both in Sierra Leone and abroad.

The Mabole Fruit Company had an outstanding loan from African Development Bank through National Development Bank of US$395,000 in 1984 and a Leone loan of about 40,000 directly from the National Development Bank. Both these loans continue to accrue interest while the factory is closed and all the capital assets are physically depreciating.

The Government is now interested in rehabilitating the Mabole Fruit Factory before it is put up for privatization. The programme for rehabilitation would ensure that the citrus plantations already existing in the area as well as those that are newly put up will be fully utilized thus providing a continuous source of income to the farmers in the area. Besides, it will also establish correct management and marketing practices as well as machinery maintenance schedules and accounting and financial control methods. It will also provide for training operatives and management executives before being privatized.

The likely cost of additional equipment needed for rehabilitating the Mabole Fruit Company is summarized below. To this should be included a technical assistance programme of providing a General Manager and a Factory Manager with provision for training local people. A two year assistance programme appears reasonable.

A. Cost of Providing Additional Pieces of Processing Equipment to Mabole Fruit Company is Estimated as follows:-

		US$
I.	For Jams, Jellies and Marmalades	
	Vacuum Jam Cooker) Citrus Peeler)	21,000
II.	For Squashes	78,000
III.	For Juice Concentrates	66,000
	Total	169,000

B.	Improvements To Infrastructure and Services	
	Total Cost	238,000
C.	Additional Processing Equipment and Associated Costs	221,400
D.	Laboratory and Testing Equipment	1,800
	Total Cost (A+B+C+D)	$ 630,200

The technical details of the individual items of equipment are given in the report.

Besides machinery and equipment for rehabilitating the Mabole Fruit Company, it will also require working capital.

The total assistance needed may be summarized as follows:-

	US$
Management Contract for 2 years	350,000
Equipment	630,200
Vehicles	40,000
	1,020,200
Incidentals 10%	100,000
	1,120,200

3. Relocation And Rehabilitation of Integrated Fish Meal Company

The Industrial Development Department of the Ministry of Trade and Industry has made a preliminary analysis of the causes for the closure of the Integrated Fish Meal Unit at Jui, near Wellington in Freetown. This unit is out of operation for three years. But it has excellent equipment and facilities, such as a thousand tonnes cold storage facility, a diesel generator, a 40 tonnes chilling facility etc. needed for a complete fish processing enterprise. The unit is in the custody of the National Development Bank.

Apart from the management problem, this unit is not ideally located and it is advised by consultants that it should be re-located in order to retrieve a good part of the investment already sunk in the enterprise.

Recent estimates have placed the stocks of all pelagic fish at a minimum of 120,000 metric tons from which 70,000 metric tons could be taken without damage to the stocks. Demersal stocks have been estimated at 105,000 metric tons with a sustainable yield of 42,000 metric tons a year.

The combined estimates ar[illegible]ords of catch from the inland and artisanal and indust[illegible]l fisheries indicated a landed national fish supply of 67,000 metric tons. Therefore, there is considerable scope for the economic utilization of marine fish in Sierra Leone.

Prospective investors are advised to negotiate with the National Development Bank in Freetown to mutually determine how best the excellent facilities available at Jui can be fruitfully exploited.

The relocation of the unit would involve the selection of a suitable site and the cost of civil works and construction. It would also involve the dismantling of the existing facilities at Jui and transplanting them at the new site.

The new capital equipment needed will be:-

4 trawlers for deep sea fishing either by purchase or on lease. If the factory is to be rehabilitated it will also require two experts for at least 2 years to render the company operational, train local people, establish management, accounting and operational principles.

An expert in fish catching and processing techniques will be needed for 3-4 weeks to work out the various parameters in the rehabilitation programme.

B. RESOURCE-BASED INDUSTRIES

1. Growing And Processing of Sugarcane To Produce Sugar

Introduction

The increased foreign exchange cost of sugar imports and the benefits to be derived from a permanent supply of additional domestically produced sugar had prompted the Government of Sierra Leone to prepare a suitable study for site(s) identification for production of sugar cane type of technology and the size of viable sugar plant suitable for implementation in Sierra Leone. At the request of the Government of Sierra Leone, the Industrial Development Unit of the Commonwealth Fund for Technical Co-operation, prepared a Feasibility Study establishing the viability of a second sugar factory in the country. The Study establishes the feasibility and operation of facilities for a second sugar plantation and sugar factory of 1250 tonnes of sugar cane crushing capacity to produce 15,000 tonnes of sugar annually.

The present demand for sugar in Sierra Leone is estimated at 29,000 tonnes per year. The Magbass sugar factory, which was commissioned in 1981, is expected to produce 7,000 tonnes of sugar. Thus, the country will have a gap of 22,000 tonnes of sugar which are being met through imports. The gap is estimated to increase considerably and require the use of scarce foreign exchange. It is estimated that the short-fall in the country's sugar requirement will reach a level of over 30,000 tonnes by 1995. This short-fall can be met only by setting up a new sugar project, capable of producing about 15,000 tonnes sugar annually and also by increasing the capacity of Magbass from the present level of 7,000 tonnes to 12,000 tonnes per annum which is the maximum it can reach with some additional balancing equipment.

New Sugar Project

Since no sugar cane is grown in Sierra Leone, except in the estate farm of Magbass sugar factory, the criteria of site selection had to be based on study of agro-climatic conditions such as soil and its topography, temperature, sunshine hours, and economic considerations such as cost of land development, irrigation, and development of infra-structure. Almost a dozen sites namely TormaBum, Pendembu, Senehum (BO) Makoba (BO), Port Loko (Rhombe Swamps), Gberia Timbako (Kabala), Fadugu, Kumrabai Mamila, area under Yoni Chiefdom, Robinkia (Makeni) etc. were visited and studied by the team on the spot.

Proposed Location

For the establishment of sugar cane plantations and the factory, the area located on the river bank of the Pampana River in the chiefdoms of Kumrabai Mamila and Yoni (within the central plans region) has been considered to be the most suitable site having regard to the above factors. The proposed area is easily accessible from Freetown (about 100 miles) and also well connected with Mile - 91 in the South and Magburaka in the North. More than 20,000 acres of fairly well-drained flat land is available which would not involve any displacement of commercial crops. Further, irrigation facilities would be available from the Pampana River. The cost of land development would be comparatively low.

The proposed project will have two main components. One is an estate farm to produce adequate quantities of sugar cane for the factory with a rated capacity of 175,000 tonnes of cane per annum. The other is the factory to process 1,250 tonnes of cane per day to produce direct consumption sugar and to have an in-built capacity to be expanded at a later stage to a daily crushing capacity of 2,000 tonnes of sugar cane.

Crushing Capacity

Having regard to the national requirement for sugar, economic viability, suitability of technology, and the expected duration of crushing operations, a plant having a cane crushing capacity of 1,250 tonnes of cane per day or 58 tonnes of cane per hour based on 22 hours working (capable of producing 15,000 tonnes of sugar annually) is being recommended. This plant will have an in-built capacity for expansion to a cane crushing capacity of 2,000 tonnes cane per day and producing 25,000 tonnes sugar annually after the addition of a few items of balancing equipment.

Availability of Sugar Cane

On the basis of a crushing capacity of 1,250 tonnes of cane per day and a crushing duration of 140 days (net), the total requirement of cane in the optimum year will be 175,000 tonnes and, therefore, the area of cane required would be 7,000 acres, assuming an average yield of 25 tonnes of cane per acre taking into account the plant and ratoon crops together. The sugar cane area will be suitably increased to meet the requirement for expansion in the capacity of the factory. In the initial year, the entire cane requirement will be met by the factory captive farms. Efforts will be made, however, to induce outgrowers to grow sugar cane to the extent of about 25% of the requirement, by providing extension facilities, seeds as well as support of farm equipment, thus introducing modern farming method in the area.

Duration of Operation

With regard to climatic conditions, cane crushing would be possible between mid-November and April. Taking into account holidays and cleaning periods/planned shutdowns, out of 160 days of gross duration, a period of about 140 days of actual crushing is quite feasible.

Cost of New Project

The project is estimated to cost around Leones 90 million (US$ 36 million) of which about Leones 74.41 million (US$29.76 million) is the foreign exchange component. The project cost includes cost of land, buildings, machinery for sugar manufacturing, sugar cane plantation and irrigation/ drainage facilities required.

Details of cost components are given in Table below:

Estimated Capital Cost of Project Million Leones (2.5 Le. - US$1.0)

S. No.	Particulars	Local Cost	Foreign Exchange Component	Total
1.	Cost of land develcpment (operational)	1.60	-	1.60
2.	Agricultural Machinery and Equipment	-	10.82	10.82
3.	Harvest and Transport Equipment	0.25	6.52	6.77
4.	Irrigation and drainage facilities equipment, etc.	0.08	0.22	0.30
5.	Agro-Workshop Equipment	-	0.50	0.50
6.	Factory Equipment	1.81	27.84	29.65
7.	Misc. Fixed Assets	-	5.20	5.20
8.	Buildings	8.80	7.36	16.16
9.	Project Management/Consultancy	0.30	1.00	1.30
	Sub Total	12.84	59.46	72.30
10.	Contingency 10%	1.28	5.95	7.23
11.	Preoperative expenses			
	(i) Company formation, Travelling and Agricultural Nursery expenses	1.47	-	1.47
	(ii) Interest during Construction period	-	9.00	9.00
	Grand Total:	15.59	74.41	90.00

Working Capital Requirement

The working capital requirement has been estimated at Leones 10.5 million (US$ 4.2 million). The working capital requirement is estimated at 6,725 thousand Leones during the first year of operation at 70% capacity utilization, 8,621 thousand leones during the second year of operation at 85% capacity utilization and at 10,535 thousand Leones from the third year onwards at 100% capacity utilization. The Standard Bank of Sierra Leone Limited and the International Bank of Trade and Industry have expressed their willingness to provide working capital for this project.

Means of Financing

In order to meet the above capital cost, the following financing plan has been assumed with a debt-equity ratio of 2:1.

	(Million Leones)
Equity	30.00*
Long term F.E. Loans/ Deferred Credit	60.00
	90.00

* Part of equity money to be raised in foreign exchange.

A deferred credit arrangement has been assumed to finance the foreign exchange element of the capital cost of plant and machinery and a softer loan has been assumed for infrastructure, irrigation, drainage and land development and housing. Part of the equity will be subscribed in foreign exchange so as to enable servicing of the loans within a reasonable period.

External Funds Required

External funds are required to finance part of the equity in foreign exchange. Majority private sector participation is envisaged with part of the equity offered to the rural community in which the factory and plantations will be located. External assistance will be needed to undertake pre-operation activities such as providing irrigation facilities initially for 2,000 acres to take care of the seed multiplication area. Further, measures are needed towards flood control measures on the Pampana River to prevent submerging of low lying cane growing areas, by draining out flood water. External assistance is also sought to prepare land for sugar cane cultivation as follows:-

Project Year	Seed Farm (acres)	Factory Farm (acres)	Total (acres)
0	20	-	20
1	200	-	200
2	230	1700	1930

The cost of land development was estimated at Le1.60 million, while pre-operative irrigation and drainage facilities were expected to cost Le0.30 million. Taking into account inflation it is expected that total external assistance needed may be about Le2 million (or US$ 800,000) which is likely to facilitate an investment of nearly US$ 40 million on this important agro industrial project.

In addition to the above, the Government will require the following technical personnel from aid agencies to initiate the programme:-

A. SURVEYOR

(a) Surveyor will survey the area with a view to identifying suitable areas within the recommended site for sugar cane plantations, factory, residential colony, etc. etc.

(b) He will also prepare detailed maps showing contours for deciding location of pump station, irrigation channels for proper flow of water to the sugar cane fields.

(c) He will undertake the work of testing of soils in respect to load bearing capacity with a view to proper designing of foundations of machinery.

(d) Survey in respect to ground water potential will also have to be simultaneously carried out to explore potentiality of irrigation through bore wells.

B. FINANCIAL CONSULTANT

(a) He will attend to the matters connected with the issue of capital. The articles of association and the memorandum of association will have to be drafted by the solicitors.

(b) The contracts and other legal formalities etc. to be followed in connection with the award of contracts to machinery manufacturers etc. will have to be scrutinised and the necessary back-up support for documentation will have to be provided by the consultant.

(c) The entire financial tie-up for the project as recommended will have to be attended to by the consultant. He will negotiate both the foreign loans, line of credit terms and the domestic loans including provision of working capital.

(d) He will oversee the project implementation schedule and provide the necessary administrative back-up support to the company to keep the project implementation activities moving as per schedule.

C. PROJECT CO-ORDINATOR/ADVISER

(a) The project co-ordinator/adviser will be a qualified expert in the field of Sugar Technology and/or Engineering having sufficient practical and managerial experience of handling the sugar project and the working of the sugar industry.

(b) The project co-ordinator will advise the company in finalisation of contracts for machinery supplies, civil contracts, layouts and site plans etc.

(c) He will keep a close watch on the progress of project and monitor the same.

(d) Activities in respect to supplies of machinery, electrical equipment besides civil engineering jobs, appointment of staff etc. have to be closely monitored and co-ordinated by the Project Co-ordinator/Adviser during the entire period of project implementation beginning from finalisation of contracts to the commissioning stage i.e. for a total period of six years.

(e) Acquisition of land - immediately after the decision for setting up the sugar plant is taken. Steps will have to be taken to acquire about 20,000 acres of land in the area recommended in favour of the company. This activity will be attended by the Co-ordinator.

D. EXPERT FOR STARTING TRIAL CENTRE ON SUGARCANE AND SEEDCANE NURSERY

In order to adhere to the schedule of implementation of the project, the first step that would have to be taken relates to the establishment of a trial centre and nursery. In fact, an

expatriate agronomist would need to be deputed for about six months to start this work.

Once the project is initiated and commissioned with private sector participation and management, technical personnel from external assistance may be withdrawn.

2. FISH SMOKING UNITS

Fish constitutes the major part of the protein in the diet of the Sierra Leonean people. It is estimated that the annual per capita consumption of fish in Sierra Leone is 21 kgs. It is also estimated that nearly 50,000 people are engaged in the fishery activities.

Sierra Leone has an actual coastline, including bays and estuaries close to 600 kms. (370 miles). The marine catch in Sierra Leone within the 200 mile exclusion zone is estimated at 120,000 metric tons of pelagic fish. It is also reliably stated that 70,000 tons of this stock can be annually harvested without damage to the stocks. Furthermore, demersel stocks are estimated at 105,000 metric tons with a sustainable yield of 42,000 metric tons.

Inland fishing is conducted largely during the dry season, when the rivers are low and when, in many areas, fish become isolated in pools and lakes near the rivers. Annual harvest of inland fish is variably estimated between 5,000 tonnes and 11,000 tonnes.

Reliable figures of fish harvest in the Sierra Leonean waters are not available. However, taking into account informed estimates and whatever records that are available, fishery experts have placed the total landed fish supply of 67,000 metric tons in 1979.

On the basis of population increases, the demand for fish in 1986 is estimated to be 80,000 tons. This is short of UNDP/FAO estimate of 90,000 tons for the same year.

Fish Smoking

The smoked fish industry is traditional in Sierra Leone and is operated at artisanal level and located among the village fishing communities. There is only one organised fish smoking unit operating on a small-scale in the private sector.

New Proposals

The Ministry of Trade and Industry realizing the importance of fish smoking in the country, organised the preparation of a feasibility study through the Industrial Development Unit of the Commonwealth Fund for Technical Co-operation.

The feasibility study has established that there is a large potential market for smoked fish in Sierra Leone, as well as an export market in the neighbouring countries. It has therefore been decided by the Government that a number of fish smoking units should be promoted in the private sector in the country. The ideal capacity for each unit recommended is 1 ton to 1.5 ton of smoked fish production for 12 hours. The project costs based on 1983 prices are as follows:-

Details	Leones	Equivalent $
Buildings	170,000	68,000
Plant	173,400	69,360
Equipment	85,000	34,000
Shipping and Insurance	64,600	25,840
Local Materials and Labour	51,000	20,400
Working Capital	56,500	22,600
Technical Assistance	40,800	16,320
Travel & Subsistence	40,800	16,320
Interest (capitalized)	52,000	20,800
Contingency	17,000	6,800
Total	751,100	300,440

Broad revenue and expense projections of the proposed project are as follows:-

In Leones

Details	Years				
	I	II	III	IV	V
Revenue	778,520	1,055,000	1,324,800	1,324,800	1,324,800
Expenses					
Personnel	34,500	34,500	34,500	34,500	34,500
Supplies	78,940	94,521	109,502	109,502	109,502
Maintenance	1,000	1,000	1,800	2,300	2,300
Materials	521,308	699,853	876,321	876,321	876,321
Total	635,748	829,874	1,022,123	1,022,623	1,022,623

The internal rate of return on equity is worked out at 41% and on total capital invested at 29%.

Assistance Requested

The Ministry of Trade and Industry would like to promote at least four smoked fish units in the country in the private sector, for which long-term capital loan of US$1.5 million may be needed. The possibility of utilizing the idle equipment and facilities at the Integrated Fish & Meal Company at Jui, by relocating them at a more appropriate site and establishing a fish smoking unit along with fish catching and freezing activities may also be considered.

3. Stone Cutting and Processing

Building materials are important to all sections of the people. The poor are particularly affected by the high cost of building materials, most of which are imported. For example, most of the houses in the urban and semi-urban areas are using cement blocks which use imported cement. So also is the case with roofing materials. It is possible to utilize a wide variety of locally available materials for building purposes. Stone is one such item.

The Ministry of Trade and Industry in co-operation with the UNIDO undertook a feasibility study on stone cutting and polishing. This tudy has established the viability of establishing such a unit. The proposal put up in the Feasibility Study is to establish a commercially viable pilot plant in the private sector, which, by its demonstration effect can have a multiplier effect.

Stone is a material which can be utilized practically without waste in all sizes, shapes and colours. The consultant from the UNIDO had identified several large exposures of easily workable stone quarries in the country. Sierra Leone, unlike the traditional stone producers has the opportunity to adapt the latest technological methods to local conditions and to convert these resources into extremely valuable material for buildings and other civil works.

Markets

The local architects have shown willingness to incorporate stones, when they are available in commercial quantities, in their building designs.

Location

The consultant visited and examined 20 quarries all over the country and has identified a quarry owned by a private party in Wellington as the most suitable for the pilot plant as it has good access road leading up to the quarry face and is also close to Freetown where the main building activities are going on.

Investments Required

The investments required to put up the pilot plant are summarised below. These figures pertain to 1982 and have to be adjusted for inflation:-

Pilot Stone Cutting Plant
Small Unit for Demonstration Purposes Only
List of Equipment Required

Quarry (Equipment for stone extraction)	US$
1 Small Mobile Compressor Diesel Engine 48/60 H.P.	12,000.00
1 No. Rock Boring Hammer Complete with Drill Bits	1,000.00
10 Nos. Sets of Plugs and Feathers	200.00
100 No. Hose & Fittings for Airlines	1,000.00
1 No. Set of Heavy Wedges 12 kg.	75.00
2 No. Crow Bars approx. 12 kg.	150.00
4 No. Large Levers, approx. 12 kg.	150.00
4 No. Sledge Hammers 2/9 kg. 2/12 kg.	100.00
2 No. Hand Shovels	45.00
2 No. Picks	45.00
1 No. Small Winch	250.00
US$	15,015.00

15,015.00

b/f 15,015.00

Factory (Equipment for cutting and polishing)	US$
1 No. Diamond Saw 700mm Dia. Blade	25,000.00
1 No. Circular Diamond Tipped Blade	1,500.00
1 No. Jenny Lind Polisher	6,000.00
3 No. Sets of Segments for Granite	450.00
1 No. Small Splitting Machine	7,500.00
2 No. Sets of Blades	150.00
6 No. Punches & Chisels	50.00
Sundry items	500.00
	41,150.00

41,150.00

US$ 56,165.00

Pilot Stone Cutting Plant
Unit Capable of Being Commercially Viable

Quarry (List of equipment required)	
1 No. 250 C.F.M. Mobile Compressor Diesel Engine 48/60 H.P.	15,000.00
2 No. Rock Boring Hammers complete with Drill Bits (tungsters tipped)	2,000.00
20 No. Sets of Plugs & Feathers	400.00
200 M. Lin. Hose & Fittings for Airlines	2,000.00
2 No. Sets of Heavy Wedges 12 kg.	150.00
3 No. Crow Bars approx. 12 kg	225.00
6 No. Large Levers approx. 7.5 kg.	225.00
6 No. Sledge Hammers 3/9 kg. 12 kg.	150.00
3 No. Hand Shovels	67.50
1 No. Water Pump	400.00
4 No. Picks amd Punches	150.00
1 No. Small Winch	250.00
1 No. Paving Breaker and Chisels	500.00
1 No. Loader for lifting blocks and transporting stone to factory	10,000.00
1 No. Small Mobile Forge for sharpening tools	4,000.00
US$	32,517.50

b/f		32,517.50

Factory

1 No. Primary Saw (wire saw)	15,000.00	
1 No. Diamond saw with rise and fall facilities	30,000.00	
2 No. Circular Diamond tipped blades for granite	4,000.00	
1 No. Jenny Lind Polisher	7,500.00	
3 No. Sets Polishing Segments	150.00	
1 No. Small Splitting Machine	7,500.00	
2 No. Sets of Spare Blades	150.00	
1 No. Angle Grinder & Supply of dises	250.00	
1 No. Large Hand Drill with Hammer action	300.00	
2 No. Small Hand Drills with Hammer action	200.00	
supply of drill bits	150.00	
1 No. Small Hand Polisher	1,000.00	
1 No. Small Dolly Machine for texturing	2,000.00	
supplies of tungster tipped chisels and punches	1,000.00	
supplies of lubricants	1,000.00	
1 No. Forklift Truck	10,000.00	
Sundry items	1,600.00	
US$	81,800.00	
		81,800.00

Total cost of Equipment = US$114,317.50
= Le 285,794.00

Assistance Required

The Ministry of Trade and Industry is requesting for a grant of US$150,000 in terms of machinery and equipment to put up the Pilot Plant. The plant will be operated with private sector management with participation by the National Housing Corporation as a minority partner.

Training of local persons on the site with at least two experts in the line has also to be provided for to ensure successful operation of the plant. The cost of the two experts has to be added to the value of machinery and equipment.

C. SMALL-SCALE AND HANDICRAFT ACTIVITIES DEVELOPMENT: GROWTH CENTRE PROGRAMME

The Government has taken note of the fact that the small-scale and handicraft industrial establishments constitute a major element in the industrial sector with respect to value added and employment. These establishments also form the seed-bed for the indigenous entrepreneur development of the country. The Government has also now realized that this vulnerable section of the society has not received the attention and assistance it deserves from the national authorities as well as bilateral and multilateral aid agencies. The main problems of these establishments are antiquated production techniques with no scope for exposure to improved designs and modern methods of production, lack of marketing outlets beyond their area of operation, absence of commercial and institutional financing facilities and lack of opprotunities for training to upgrade their traditional skills through institutional net-work or extension services.

In recognition of the importance of the small-scale and artisanal enterprises, the problems they encounter and their potential role in the nation building activities, the Government of Sierra Leone has initiated a "Growth Centre" programme to develop and promote small-scale and artisanal enterprises in the country.

The proposed development programme is non-traditional and innovative approach to develop small-scale enterprises at the grass-root level in their own environment.

The "Growth Centre" programme is essentially a rural programme organised within the framework of traditional rural community. The representatives of the rural community will fully participate in initiating, planning and implementing their own programme. The extension workers from the Ministry of Trade and Industry and technical

assistance personnel will operate as catalysts to transmit new ideas, new designs, appropriate technology, relevant management practices and knowledge of new marketing outlets etc.

Each "Growth Centre" will cover several villages selected with an objective criteria. A Growth Centre Planning Committee consisting of representatives of villages assisted by a Stimulator provided by the Government as well as Extension Workers will draw up realistic industrial development programmes/projects for the area taking into consideration the local demand, availability of local raw materials and skills. The programme will involve the construction of a workshop building at each Growth Centre Headquarters in the rural area wherein the major activities selected for the area will be established for commercial production as well as for training rural entrepreneurs. The surplus from these operations will be used as a Revolving Fund by the Growth Centre Planning Committee for assisting rural entrepreneurs. Therefore, the initial resources input will have continuing and multiplier development effect on the rural community if properly implemented and monitored.

The rural entrepreneurs will be trained by the Extension Workers and the Growth Centre employees either at the Growth Centre Production cum-Training Workshop or in the respective villages as is feasible and practicable. The objective is to train and develop entrepreneurs without up-rooting them from their surroundings and without disrupting their family life.

The trainees who show aptitude for the activities they are trained in, may be assisted with equipment and raw materials if they display entrepreneurial capabilities. The equipment and initial raw materials will be lent through the Growth Centre Planning Committee on a deferred payment basis.

The entrepreneurs thus selected, trained and equipped will be monitored by the Growth Centre Planning Committee and the Extension Workers till the time they are able to stand on their own.

The Committee will recover the cost of equipment and the initial supply of raw materials in pre-determined instalments. The amounts so recoverd will be put in a bank account with the Stimulator as a joint signatory as is appropriate with one or two other members of the Committee. These amounts will be used as a Revolving Fund for further industrial development activities.

Typical projects proposed to be promoted and implemented in the Growth Centre programme are:- palm oil extraction; palm kernel oil extraction; other oil seed extraction such as groundnuts; soya beans; sunflower etc.; cassava processing i.e., garri making; handloom and power-loom weaving and processing of fabrics;

ceramics using local clay; carpentry; soap making; blacksmithy and simple agricultural implements; post harvest storage requirements such as mini silos; garment making; knitting; basket making; brush making; coir processing; fish smoking and any other projects as may be identified in each Growth Centre area based on local needs, local raw material availability and local expertise.

A number of projects from among the above are specially prepared for women for whom a special training programme and extension assistance is designed. However, women are also given equal opportunities in all other projects.

During the first phase of this programme three main Growth Centres in the rural areas of the three respective Provinces are proposed to be covered in addition to the Western Area. Based on the experience gained during the first phase, modifications if necessary in its implementation will be made and the programme will be expanded either with multilateral or bilateral assistance.

An important characteristic of this programme is that minimum expenditure will be incurred in institutional framework and maximum outlay will be channelled towards development activities such as workshops, equipment, raw materials and extension services. It is a direct assistance programme to individual small-scale and rural existing and potential entrepreneurs.

To assist in the implementation of this programme the Government is in the process of strengthening the Small Industries Division in the Ministry of Trade and Industry particularly in respect of technical and extension personnel. The estimated total cost to the Government over a period of two years is Leones 394,000 in local currency.

External assistance is being sought from the European Development Fund (EDF) of European Economic Community (EEC) through the Lome Convention to implement the first phase of the Growth Centre Programme for a period of two years is as follows:-

		ECU	% to total
(A)	Technical Assistance Personnel	521,000	35
(B)	Equipment and Raw Materials		
	(1) Eastern Province	165,220	
	(2) Northern Province	151,000	
	(3) Southern Province	155,000	
	(4) Western Area	115,500	
	Total	586,720	39
(C)	Workshop Buildings and Showroom	370,000	25
(D)	Bo Headquarters	25,000	1
	Total	1,503,000	100

The above programme is only a small effort in three rural areas and Freetown to initiate a small-scale and handicraft industry development programme. In view of the apparently high development content of this programme, the Ministry of Trade and Industry is proposing to initiate this programme in all the 12 Districts of the country during the second phase i.e., beginning of 1986.

On the basis of detailed costing worked out for the ILO proposal the cost of workshop building, equipment and raw materials for each Growth Centre for a two-year period works out as follows on an average:-

	US$
Workshop	100,000
Equipment and Raw Materials	150,000
Office	25,000
	275,000

The above estimates for each Growth Centre do not include the cost of technical personnel to be provided by the aid agencies. If we include two UN Volunteers to be financed by the aid agencies for each Growth Centre in the District, the total cost to implement this programme in each District will be US$350,000 for two years.

Request for Assistance

The Government is requesting that multilateral or bilateral agencies may adopt one District or a group of Districts to implement the Growth Centre programme at a cost of US$350,000 per District for an initial period of two years.

D. INFRASTRUCTURE

1. Technology and Design Development Centre

Sierra Leone does not have a modern engineering industry except the National Workshop which is privately managed. At the current level of industrial development in the country, it is not possible to adapt or develop machinery and equipment to suit local requirements. The country therefore requires a simple facility to adapt, develop and fabricate simple machines and equipment as are required in the rual and urban areas by small-scale entrepreneurs. Adaptation and development of machinery and equipment as well as experimentation and application of appropriate technology are basic pre-requisites to lay the foundation for sustained industrial development.

The Ministry of Trade and Industry is proposing the establishment of an Appropriate Technology and Design Development Centre with the intimate involvement of the Engineering Faculty of the University of Sierra Leone. There are several positive advantages in involving the University. Important among these are:-

1) Establishing a facility within an existing organisation, thereby reducing costs and the gestation period;

2) Utilizing productively the scarce technical personnel;

3) Making maximum use of technical and scientific facilities already available;

4) Providing opportunities to teachers and students alike to make a direct contribution to industrial development;

5) Encouraging a dialogue between Industry and University;

6) Ensuring the continuity of the programme to utilizing the University personnel at comparatively low cost.

The project would require a feasibility study to determine the various parameters. The costs included in this outline are just indicative.

Immediate Objectives

1) Establishment of Appropriate Technology Development Centre with equipment and expertise for design/fabrication of Appropriate processes and equipment.

2) Through these facilities to upgrade capabilities of National Technology personnel and adopting, and absorbing appropriate design/ manufacturing, fabrication and quality control techniques.

3) Manufacturing of spare parts components and simple equipment for industrial and agricultural sectors.

4) Rendering assistance to small and medium-scale industries in the fields of design, fabrication, quality control and other technical services.

Priority Rating

The project when implemented will promote the development of local ability to develop local technologies and products which are appropriate to the environment. Appropriate from the point of view of consumer custom and appropriate from the manufacturing process and local availability of raw materials, the centre will also deal with training.

The setting up of the Centre would not stop the transfer of technology if this was appropriate and could not be developed locally.

Activities include:-

(i) Industrial products design and development including consumer goods, transportation equipments, machinery etc.

(ii) Capital goods equipment design including heavy equipment, material handling equipment etc.

(iii) Production technology and tool design, including press tools etc.

(iv) Process design.

(v) Mechanical workshops, prototype and tool manufacture.

(vi) Heat treatment workshop and mechanical laboratories.

Other Divisions of the Centre will be:-

- Training Division
- Documentation and Information
- Small-Scale Industry.

Implementation Period

The project is envisaged to be initiated during the period 1985/86.

Costs

The project requires capital funds, working capital as well as salaries of experts. After 36 months, the Centre is expected to be self-supporting through manufacturing of spares and repair services to industries, agriculture and transport sectors.

		US$
Construction cost of building	-	250,000
Machinery, equipment and tools	-	300,000
Design office and other office equipment	-	10,000
Raw material, expendable tools and supplies (36 months)	-	150,000
Local expenses for clearing, transporation and installation of equipment and raw materials	-	42,000
Salaries of local counterparts, operatives and supporting staff (25-36 m/m)	-	175,000
International experts (2 x 36 m/m)	-	468,000
Fellowship (2 x 12 m/m)	-	108,000
Project vehicle (4-wheel drive)	-	12.000
Miscellaneous operating cost (electricity, fuel, telephone, stationery etc.) (36 months)	-	33,000
Total	US$	1,548,000

The University will contribute the land and the counterpart support.

2. INDUSTRIAL ESTATES, INVESTMENTS AND DEVELOPMENT CORPORATION (IEIDC)

The low level of industrial development in Sierra Leone needs radical doses of developmental inputs to reactivate the stagnant sector and to render it sensitive to the socio-economic requirements of development. Lack of institutional framework to promote industrial development has been cited as one of the critical handicaps for industrial stagnancy. An institutional framework which can respond to the developmental needs of existing and new industries at one focal point appears to be the answer to this need.

The Ministry of Trade and Industry has set up the Industrial Development Department in the Ministry to provide an intellectual back-stopping facility for industrial development activities. But as the industrial basis of the country is very weak and the industrial tradition is scanty, material back-stopping through long-term loans and/or machinery and equipment hire-purchase facilities, working capital provision, consistent raw material supply at reasonable prices and provision of reasonably priced industrial work places should also be simultaneously made available if any meaningful industrial development programme is to succeed in Sierra Leone.

The Ministry of Trade and Industry is now proposing the establishment of "Industrial Estates, Investment and Development Corporation" to actively undertake such and related industrial development activities as well as participate in them. The proposed Corporation will operate commercially. Its equity will be offered to commercial banks, insurance companies and other financial institutions and private individuals in the country. International financial institutions such as the World Bank, the I.F.C., the African Development Bank, the European Development Fund,

Arab Gulf Fund, BADEA, Islamic Development Bank, etc. as well as friendly countries, will be requested to participate in its equity and provide lines of credit.

The main objective of this corporation will be to promote industrial development in Sierra Leone both in the large and small-scale sectors.

The functions of the corporation will be:-

1) Long-term loan facilities to acquire fixed assets for industrial development;

2) Provision of machinery on hire-purchase to small-scale industrial enterprises;

3) Establishment of Industrial Estates and Workshops and their management;

4) Provision of working capital;

5) Establishment of a raw material bank for selected raw materials;

6) Acting as implementing or local co-operating agency in industrial development for multi-lateral and bilateral aid agencies.

The corporation will function on strict commercial principles. Any developmental activities requiring subsidies or free service will have to be paid for by the Government or the agencies and institutions promoting such activities.

It is likely that the corporation may require total resources to the extent of $30 to 40 million with appropriate equity and lines of credit. The Government may take a small equity.

The corporation will take over the industrial financing activities allocated to the National Development Bank and learning from its experience diversify into other related and essential industrial development activities reflecting the current needs.

E. REQUESTS FOR TECHNICAL ASSISTANCE TO PREPARE SELECTED PRE-FEASIBILITY STUDIES

1. AGRICULTURAL IMPLEMENTS AND POST-HARVEST STORAGE EQUIPMENT

JOB DESCRIPTION

Post Title:	Expert or Consulting Firm in Agricultural Implements and Post-Harvest Storage Equipments.
Duration:	Four Months
Date Required:	**As soon as possible**
Duty Station:	Freetown with travel as required
Purpose of Project:	To assist the Ministry of Trade and Industry in identifying the type of agricultural implements to be manufactured in the country.
Duties:	The Expert will work with the Industrial Development Department in the Ministry of Trade and Industry, the National Workshop and the Ministry of Agriculture in:-

1. estimating the current and future demand for different types of agricultural implements in the country;

2. estimating the type, quality and quantity of agricultural implements locally manufactured by the blacksmiths and other workshops;

3. evaluating the extent of improvements that can be introduced in the implements currently used and the type of assistance needed to effect such improvements;

4. examining the scope for introducing improved implements and the institutional arrangements required to popularize new and improved implements;

5. assessing the technical capability of the National Workshop and other engineering workshops to manufacture improved varieties of implements and suggesting the type of new machinery and/or processes for this purpose;

6. examining the type of storage and packaging material such as drums and silos needed for palm oil and rice;

7. preparing prefeasibility studies for the manufacture of agricultural implements, oil drums and mini silos; and

8. undertaking any other related activities in consultation with the Industrial Development Department, Ministry of Trade and

Industry to achieve the objectives of the Project.

Qualifications: Mechnical Engineering Degree with several years' experience in the Manufacture and marketing of agricultural implements in developing countries. Experience of working in Africa will be an advantage. Option for either individuals or reputed Consulting Firms.

Language: English

Background Information: Sierra Leone is situated in West Africa between latitudes 6° 16' and 10° and longitudes 10° 16' and 13° 18' W and has a population of about 3.5 million. Agriculture in Sierra Leone is relatively underdeveloped though the majority of the people are dependent on it for their livelihood. It is estimated that less than 20 per cent of the arable land is cultivated. The small proportion of cultivated land is a feature of shifting cultivation. The implements used are rudimentary and majority of cultivators farm on small holdings. The major crops are rice, cocoa, coffee, groundnuts, cassava and ginger. Though the land is ecologically rich, the country is not self-sufficient in food. It is the objective of the Government to encourage modern agriculture, increase productivity and establish

a healthy inter-relationship between agriculture and industry. Promotion of agricultural inputs to be manufactured locally and establishment of processing industries is accorded priority in development planning. Most of the farming is done by human labour. Neither animals nor power driven implements are common. The introduction and popularization of improved agricultural implements is a prerequisite to promote productivity increase measures in agriculture. The oil palm industry is being privatized and rehabilitated. When in full production, this industry will need packaging material such as drums which are not locally fabricated. The Government is interested to get a project proposal prepared to get the drums and tins needed to store and market the palm oil. It is reported that there is a 20% loss in rice after harvest. If this can be saved, the importation of rice in the country can be significantly decreased. The introduction and populatization of a system of rice storage facilities at the farm level as well as at the village level is necessary to reduce the post-harvest losses in rice.

OIL-BEARING CROPS AND SEEDS AND THEIR INDUSTRIAL UTILIZATION

TERMS OF REFERENCE (TOR)

The consultant will be required to:

1. Establish, in conjunction with the government of Sierra Leone, the total requirement for oils and fats to meet the dietary requirements of the population and the demands of the industrial sector for food processing and soap manufacture.

   Make projections of consumption and demand for the period 1985 to 1995.

2. Establish the existing levels of Sierra Leone production of all oil bearing crops, including palm oil, palm kernel oil, coconut oil/copra, groundnut, sesame, soya bean, sunflower, oyster oil, etc..

3. Establish the pattern of imports and exports of oilseeds and fats for the period 1980 to 1984.

4. Examine the internal marketing of vegetable oils, including the chain of distribution, the adequacy of the infrastructure (roads, etc.) and transport problems. Report on marketing costs, pricing and profitability.

5. Assess, in broad terms, the medium term and long term export prospects.

6. Determine any production or economic constraints limiting the expansion of existing vegetable oil-seed crop production.

7. Identify and recommend candidate oilseed crops for production expansion programmes in Sierra Leone. For individual crops, prepare estimates of yield, output and production costs and, if applicable, mechanisation requirements.

8. Examine the options for oilseed crop development by rural or industrial field scale projects to ensure self-sufficiency of oils and potential for exportable surpluses.

9. Establish the existing level of oil processing facilities in Sierra Leone and identify any under-utilisation. Identify appropriate ways and means of improving the utilisation of the existing oil bearing resources.

10. Identify any further processing equipment requirements for the rural and industrial sectors to meet existing and any proposed oilseed development. Identify any opportunities for local fabrication of processing equipment.

11. Undertake financial and economic analyses of the various options for the development of the oilseed sector to include both rehabilitation and new investment projects.

12. Recommend a broad strategy for the development of the oilseed sector.

APPROACH TO THE STUDY

The phasing of the study would broadly fall into four categories.

1. Data and information collection in Sierra Leone.

2. Analysis and preliminary reporting in Sierra Leone.

3. Report writing at consultants' base.

4. Report presentation in Sierra Leone.

The data and information collection exercise is very important and will be very time-consuming. A major practical problem at the present time is the total inadequacy of the data base relating to oilseed products. For example, the range of estimates of palm oil production from wild palms is enormous and only original research in the rural areas of Sierra Leone could possibly hope to resolve the question. Similarly, there is entirely inadequate information on the extent of local processing through village pits, the structure of ownership and the profitability of the operations. Ideally, a properly structured sample survey should be carried out in the rural areas using a team of enumerators, but this would almost certainly be beyond the financial resources available, not to mention the well known problems of access to vehicles and fuel. As an alternative, the team members (the agriculturalist and marketing specialist) should undertake an extensive tour of the areas, with counterpart staff, to collect the information at first hand through a semi-structured survey.

The data and information collection phase would also include visits to the oil palm plantations and other sites of oilseed production, including a full review of the processing facilities. A programme of meetings with government officials, aid agency staff and the business community would be carried out in Freetown to collect basic data and establish the policy framework within which any development programme should exist, including official views on the roles of the private and public sectors.

At the analysis stage, the team would be able to make informed forecasts of the oils and fats deficit which would indicate the levels of production expansion required. The team would evaluate the various options for eliminating the deficit and the financial/economic analyses would be carried out. Preliminary findings would be discussed with government and agency representatives prior to the consultants returning to base for report writing, followed by a second visit for presentation of the report.

COMPOSITION OF THE TEAM AND TIME INPUTS

A four man team should undertake this assignment, reflecting the four major disciplines required. These are:-

1. Marketing and survey specialist.
2. Agriculturalist.
3. Agricultural economist.
4. Oilseed processing specialist.

The marketing and survey specialist would have prime responsibility for carrying out the data collection exercise to assess the demand/supply situation, i.e. points 1-3 of the TOR, in addition to undertaking the internal and external marketing aspects of the study. He should have experience of carrying out detailed survey exercises in developing countries plus broad agricultural marketing expertise.

The agriculturalist, who should have experience of palm oil and other oilseed work, would assist in the phase 1 survey and would have full responsibility for advising on the agricultural feasibility of developing the various oilseed crops and the requirements (plant propagation facilities, etc.) for expansion programmes. He would supply the economist with yield, output and other data.

3. DEVELOPMENT PROGRAMME FOR INDIGENOUS TEXTILE INDUSTRY

JOB DESCRIPTION

Post Title:	Expert or Consulting Firm in development programme for textile industry in the handloom, powerloom, factory and knitting sectors.
Duration:	Four Months
Date Required:	1985/1986
Duty Station:	Freetown with travel to Provinces as required
Purpose of the Project:	To assist the Ministry of Trade and Industry in working out a development programme for the local textile industry taking into account the demand pattern in the country and the possibility of backward integration to cotton growing.
Duties:	The Expert or Consulting Firm will work in close co-operation with the Industrial Development Department of the Ministry of Trade and Industry and with the Ministry of Agriculture and Natural Resources as necessary to:-

(a) estimate the current and future demand for textile fabrics by type of fabrics i.e. cotton, woollen man-made, rayon and mixed and their mode of manufacture i.e. by hand-loom, powerloom, factory type and knitting machines;

(b) suggest a production programme to reflect the demand in the country;

(c) examine if industrial estates for Small-scale textile units (power-looms and handlooms) are advisable;

(d) if industrial estates are advisable work detailed proposals with costings and cash flows;

(e) prepare feasibility studies for Small-scale rural based power-loom and handloom establishments;

(f) prepare feasibility studies for medium-sized fabrics making units in the knitting and/or weaving sectors; and

(g) suggest measures needed to evaluate if appropriate types of cotton can be grown in the country taking into account the ecological conditions

Background: Sierra Leone has an estimate population of 3.5 millions with an estimated demand of around 28 million meters of fabrics. There is an indigenous weaving tradition, particularly in the rural areas. Indigenous cotton is grown in scattered areas which is hand-spun and woven on the indigenous six-inch wide looms to make "Country Cloth". This cloth is prestigious and has good demand in the rural areas. The Small Industries Division in the Ministry of Trade and Industry has introduced 42" wide handlooms in Freetown and some rural areas and has trained a few weavers on these looms. The Industrial Development Unit of the Commonwealth Secretariat (London) has assisted the Government with a few powerlooms to train local people in powerloom weaving. This training programme will start in March 1985. The Government proposes to build on this foundation a textile industry in the country in the handloom, powerloom, factory and knitting sectors.

External Assistance Required: Initially the cost of engaging concultants estimated at US$40,000 as a grant. If the programme is viable equity participation and long-term loans to be determined, to implement the projects.

4. DEVELOPMENT PROGRAMME FOR SMALL-SCALE PULP AND PAPER INDUSTRY

JOB DESCRIPTION

Post Title:	Expert in Small-scale paper manufacture using local agricultural waste as raw material.
Duration:	Three Months
Date required:	1985/1986
Duty Station:	Freetown with travel to Provinces as required.
Purpose of the Project:	To assist Ministry of Trade and Industry in working out an integrated programme from raw material supply to production of paper to meet domestic demand.
Duties:	The expert or consulting firm will work in close co-operation with the Industrial Development Department of Ministry of Trade and Industry and the Ministry of Agriculture and Natural Resources as necessary to:- (a) Estimate the current and future demand for various types of paper and paper products in the country.

(b) to examine the type of agricultural waste or other suitable raw material that are currently or potentially available as suitable raw materials on a commercial basis to set up a small-scale paper mill;

(c) examine whether renewable raw materials such as rice straw from one or group of large scale farms (to be established) or bagasse from the existing or proposed new sugar mill is a feasible proposition for a new paper mill;

(d) examine whether other raw materials can be locally grown on a commercial scale;

(e) suggest the size of a possible viable paper unit taking into account that a large scale rice farm or any other raw material supplying facility should be an integral part of the project;

(f) prepare feasibility study with technical, commercial and economic parameters and financial cash flows.

Background: Sierra Leone has no paper industry. Its imports of all types of paper have averaged between 3500 - 4500 tons per year depending on the availability of foreign exchange.

Therefore, it is likely that considerable unsatisfied demand for paper has existed in the country. Therefore, the Government of Sierra Leone is considering the possibility of establishing a small-scale paper mill using local raw materials.

Rice straws is one of the raw materials proposed. However, in view of the dispersed nature of its availability and the fact that two-thirds of all farmers have less that two hectares of farm each, the collection of rice straw will be difficult and cost prohibitive. Therefore, it may be worthwhile that the paper mill establish its own rice plantation. As Sierra Leone is not self-sufficient in rice, this proposition will have the double advantage of meeting the supply shortage of rice and meeting the demand for raw materials, for paper on a sustained basis at a reasonable price.