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UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
Vienna International Centre, P.O. Box 300, 1400 Vienna, Austria
Tel: (+43-1) 26026-0 · www.unido.org · unido@unido.org

17564

Distr.
RESTRICTED

PPD/R.23
25 May 1989

UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

ORIGINAL: ENGLISH

THE REGENERATION OF LIBERIAN MANUFACTURING INDUSTRY WITH EMPHASIS ON AGRO-BASED INDUSTRIES*

Special reports on industrial rehabilitation

No. 2

Prepared by

Regional and Country Studies Branch

Industrial Policy and Prespectives Division

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V.89-56057

PREFACE

As part of the programme of the Industrial Development Decade for Africa, UNIDO's Regional and Country Studies Branch is issuing a series of studies determining both the major problems of African manufacturing and their potential for regenerating the sector. The aim is to outline policies and measures that may result in overall improvements and to identify individual plants for assistance. While earlier documents in the series deal with key issues and continent-wide analysis, this report and similar studies on Zambia and Angola are the first in a series of country-level diagnostic surveys on the rehabilitation of African manufacturing industries.

The surveys are economic and policy diagnoses of the industrial sector in selected countries. They provide estimates of resource requirements for selected industrial plant rehabilitation, as well as assessments of expected results from such rehabilitation. The surveys also provide contributions towards the formulation of sectoral, national and regional policy measures and institutional developments, and the identification of full feasibility studies and advisory services which may be required as part of the follow-up.

The present report is a diagnostic survey of rehabilitation needs in the agro-industries sub-sector of the Liberian manufacturing industry. The report focuses on the plants in the vegetable processing, wood processing and meat processing/animal feeds branches. Apart from suggestions to improve the performance of these plants, the report also contains suggestions for improvements at the sectoral and general policy levels.

The report is structured as follows: Chapters 1-4 present an overview of the economic policy and institutional environment in which plants operate at the national, sectoral and sub-sectoral levels. Chapter 5 discusses the selection of plants, after which Chapter 6 provides background information on the branches to which these plants belong. Chapter 7 is an in-depth analysis of the rehabilitation needs of three specially selected plants, and contains confidential material. General and plant-level findings and recommendations are then summarized in chapters 8 and 9, and the report concludes with a summary of project concepts, Chapter 10.

This report was prepared at the request of the Liberian Government by a UNIDO field mission which visited Liberia from 7 January to 4 February 1989. The members of the team were: Mr. George Assaf (team leader), Regional and Country Studies Branch, UNIDO and UNIDO consultants: Mr. Björn Almquist, Mr. Jan Bjoerk, Mr. Lindsay Haines, Mr. Christopher Konnneh, Ms. Micaela Maftei, Ms. Helen O'Neill (acting team leader, 14 January to 6 February) and Mr. Graham Smith. As part of its work programme, the mission held meetings with senior officials in key ministries and Government agencies - in particular the Ministry of Commerce and Industry which acted as the Government focal point for the mission - senior representatives, managers and technicians of private and parastatal enterprises, and with resident representatives of Liberia's development assistance partners, including USAID, the USAID-funded operational experts (OPEX) team, and the European Community. Consultations were also held with the UNDP Resident Representative and field officers. A list of institutions and persons met is to be found in Annex 2.

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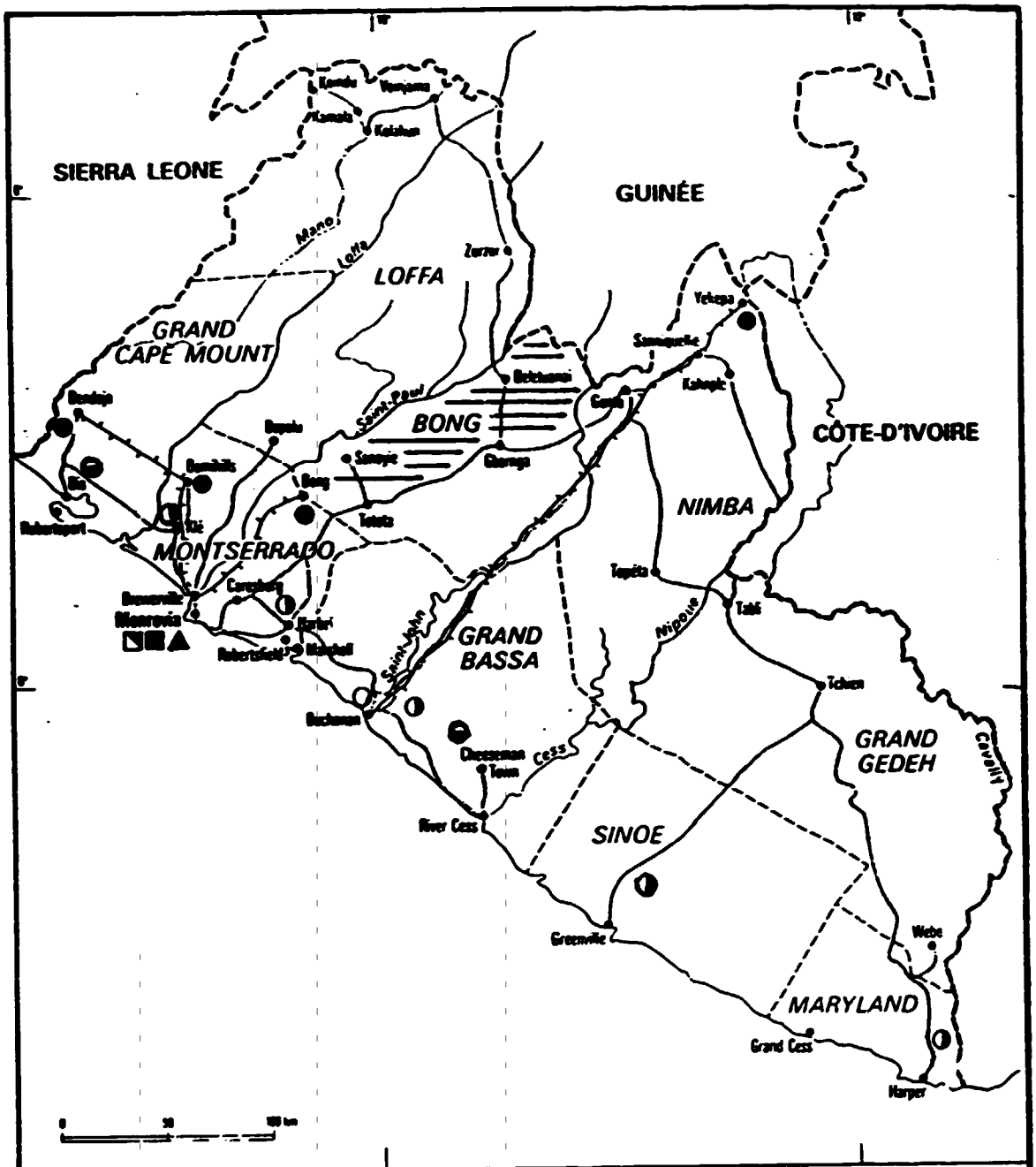
Map of Liberia



Liberia - Administrative division, transport network, selected economic activities

Source: Encyclopaedia Universalis/Grand dictionnaire encyclopédique Larousse.

General Country Information

Area: 111,400 km²
Population: 2.35 million (est. 1987); growth rate (1980/85): 3.4 per cent

Main towns: population in thousands

Monrovia	450 (1986 estimate)
Gbarnga	30 (1984 estimate)
Tchien	15 (1984 estimate)
Buchanan	24 (1982 estimate)
Harper	12 (1982 estimate)
Greenville	10 (1982 estimate)

1985 GDP at current prices (L$ million): 811.2 (1987 estimate: 907)
1985 GDP at (1980) constant prices (L$ million): 797.2 (1987 estimate: 821)
1985 Real GDP growth rate (%): -0.9
1985 GDP per capita (L$): 370
1985 GDP per capita at (1980) constant prices (L$): 364

Origins of GDP 1985 (% of total)/components of GDP 1986 (% of total)

Agriculture	19.4	Private consumption	64.3
Mining and quarrying	19.2	Public consumption	13.1
Manufacturing	8.2	Gross fixed capital formation	11.1
Construction	3.8	Change in stocks	0.8
Government services	16.1	Exports	44.4
Other services	33.3	Imports of godds and services	-35.8

1987 Exports (f.o.b. million L$ estimate): 291.1
1987 Imports (c.i.f. million L$ estimate): 233.8

Currency L$:US$
(October 1988 parallel market rate: US$1 = L$2.3)
1986 total external debt disbursed: US$1,002 million
1985 total debt as percentage of GDP: 112 (1986 estimate: 121)

1985 Life expectancy: (men) 49 years, (women) 52 years
1985 Infant mortality rate: 12.7 per cent
School enrolment: (males) 95 per cent, (females) 57 per cent
Languages: English, Golla, Kpelle, Mande, Kru and other

List of Abbreviations

ACDB	Agricultural and Co-operative Development Bank
ADB	African Development Bank
AL	Air Liberia
AI	Atlanta Industry
BADEA	Arab Bank for Economic Development in Africa
BAS	Business Advisory Service
BFC	Bureau of Forestry and Wildlife Conservation
BHPF	Baker Homegrown Poultry Farms Inc.
BOMIWOOD	Bomi Hills Wood Processing and Training Corporation
BSE	Bureau of State Enterprises
BWI	Booker Washington Institute
CDI	Centre for the Development of Industry
CEMENCO	Liberian Cement Corporation
CGS	Credit Guarantee Scheme
DPC	Decoris Palm Corporation
EC	European Community
ECA	Economic Commission for Africa
ECOWAS	Economic Community of West African States
EFMC	Economic and Financial Management Committee
ERP	Economic Recovery Programme
FFB	Fresh Fruit Branches
FDA	Forestry Development Authority
FOREX	Foreign Exchange
FRG	Federal Republic of Germany
FTI	Forestry Training Institute
GDP	Gross domestic product
GNP	Gross national product
GOL	Government of Liberia
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit GmbH
IDA	International Development Association
IDDA	Industrial Development Decade for Africa
IFC	International Finance Corporation
IIC	Investment Incentive Code
ILO	International Labour Organisation
IMF	International Monetary Fund
INRA	International Rubber Agreement
ITC	International Trust Company
IPF	Indicative Planning Figure
JASPA	Jobs and Skills Programme for Africa
KFW	Kreditanstalt für Wiederaufbau
LAC	Liberia Agricultural Corporation
LAFE	Liberia Agricultural and Fishing Enterprise
LBDI	Liberian Bank for Development and Investment
LIFZA	Liberia Industrial Free Zone Authority
LPMC	Liberia Produce Marketing Corporation
LMUTC	Liberian Mechanics Vocational Training Centre
LPPC	Liberian Palm Product Corporation
LPRC	Liberian Petroleum Refinery Corporation
LTC	Liberia Timber Corporation
LWCIA	Liberian Wood and Carpentry Industry Association
MCI	Ministry of Commerce and Industry
MIGA	Multilateral Investment Guarantee Association

MLC	Maryland Logging Corporation
MOA	Ministry of Agriculture
MOF	Ministry of Finance
MPEA	Ministry of Planning and Economic Affairs
MRU	Mano River Union
MVA	Manufacturing value added
MVTC	Monrovia Vocation Training Centre
NATCAP	National Assessment of Technical Co-operation and Projects
NBL	National Bank of Liberia
NHSB	National Housing and Savings Bank
NIC	National Investment Commission
NIOC	National Iron Ore Company
NPC	National Palm Corporation
OPEX	Operational Expert Team
RCL	Rubber Corporation of Liberia
SDR	Special Drawing Rights
SEFO	Small Enterprises Financing Organization
SME	Small and Medium-scale Enterprises
UNDP	United Nations Development Programme
UNIDO	United Nations Industrial Development Organization
WAAC	West African Agricultural Corporation
WACH	West African Clearing-House
WAIF	West African Investment and Finance Corporation
WARDA	West African Rice Development Association

CHAPTER 1

REGENERATING LIBERIAN MANUFACTURING: THE ECONOMIC AND POLICY CONTEXT

1.1 The current economic situation - factors and trends

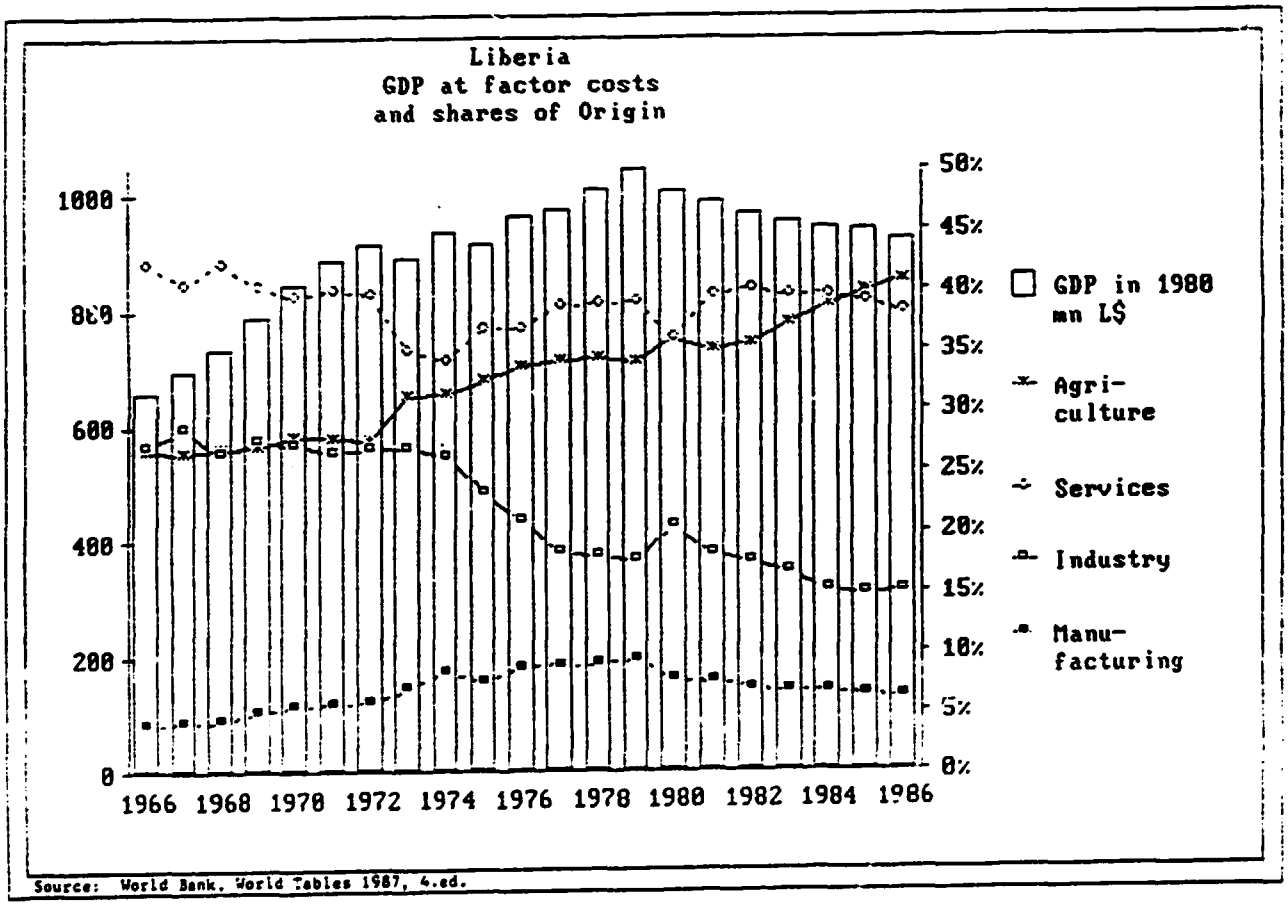
The Liberian economy can be described as a dual economy. Most of the population is engaged in subsistence agriculture. In the formal or monetized sector, activity is concentrated on the production of iron ore and rubber, which are exported with very little processing. The Government of Liberia (GOL) has estimated rural incomes in the mid-1980's at US$160 per capita; average per capita income in the formal sector was estimated at US$1,620. The manufacturing sector is very small, with a 1986 GDP share of 7.1 per cent and a gross output of US$60 million in 1985. It is mainly engaged in the production of light consumer goods for the domestic market. Diagram 1.1 provides a general overview of the economy, showing GDP figures and sector shares for the 1966-1986 period[1/]. An overall contraction of the economy is visible since 1979. The expanding share of agriculture is an indication of the development problems of the non-traditional sector, which will be analyzed in detail below.

Liberia's "open-door" policy permitting the inflow and outflow of foreign capital and profits has attracted a number of large foreign investors, mainly active in the production of primary products for export. Public ownership in enterprises is limited. Exports are dominated by iron ore, rubber and logs (see Annex Table 1), which together have accounted for 85-95 per cent of export earnings throughout the 1980s. Iron ore is the single major export, although its importance is declining as a result of the depletion of currently expolited ore deposits. The non-traded formal sector consists of manufacturing, construction and government services, supported by a monetary and financial system which has utilized United States currency as legal tender together with the Liberian dollar. The introduction of Liberian coins in 1981 has led to increasingly diverging official and parallel market exchange rates between US and Liberian currency.

The Liberian economy has experienced severe difficulties in the 1980s. The country's financial and economic problems were exacerbated by measures such as the huge expenditures for hosting the Organization of African Unity (OAU) Conference in 1979. However, there are underlying and interlinked structural factors which account for Liberia's continuing difficulties: the contraction of general sectoral production, the worsening terms of trade, and the unbalanced nature of Government fiscal operations, and the accumulation of domestic and external payment arrears.

1/ It should be pointed out that data on the Liberian economy are not always reliable. It was not until 1987, for example, that serious attempts were made to introduce systematic public accounting. This should be kept in mind when interpreting the diagrams and tables in the study.

Diagram 1.1



Source: World Bank, World Tables 1987, 4.ed.

1.1.1 Production

As Table 1.1 shows, GDP decreased in real terms (1971=100) from US$366.2 million in 1980 to US$316.2 million in 1986. Export-oriented activities experienced a stronger decline than the domestic-oriented market. The strongest decline occurred in iron ore mining: its value decreased from US$106 million in 1980 to US$75.9 million in 1986, which accounts for 50 per cent of the overall decrease in GDP.

By 1986 the downward trend had virtually come to a halt, with GDP declining by less than 1 per cent since the previous year. The main cause of the relative improvement was the increase in the value of rubber and timber production. Preliminary information available in the size and composition of GDP for 1987 and 1988 indicates that the continued good performance of rubber and timber exports has resulted in a further stabilization of GDP.

Table 1.1: Gross domestic product statistics, 1980 to 1986
(selected years)
(in million US dollars at 1971 prices)

	1980	1982	1984	1986
Export-oriented sectors	174.0	155.0	141.1	147.9
Agriculture	63.0	56.0	61.4	68.9
Rubber	21.0	22.6	30.1	31.8
Forestry	23.0	10.6	10.6	16.3
Other	19.0	22.8	20.7	20.7
Mining and quarrying	111.0	99.0	79.7	79.0
Iron ore	106.0	91.8	75.7	75.9
Other	5.0	7.2	4.0	3.1
Domestic-oriented sectors	192.2	187.6	180.2	168.3
Manufacturing	26.0	21.2	20.5	20.4
Construction	15.0	17.8	13.3	13.7
Government services	39.6	47.8	47.0	44.0
Other services	111.6	100.8	99.4	90.2
Gross Domestic Product at factor cost	366.2	342.6	321.3	316.2
Indirect taxes (net)	45.2	46.5	40.6	37.6
Gross domestic product at market prices	411.4	389.1	361.9	353.8

Sources: Ministry of Planning and Economic Affairs (MPEA) and IMF.

1.1.2 Trade

Liberia's trade balance has remained positive over the years, regardless of whether overall trade expanded or contracted. However, prices of imports have increased faster than those of exports (see Table 3.5 for 1983-1987 figures); as Diagram 1.2 shows, there was a downward trend in Liberia's terms of trade until the beginning of the 1980s. The terms of trade index fell from over 150 in the early 1970s to approximately 90 in 1981, the downward trend levelling off after the major fall related to the 1973 oil shock. There was some improvement in the terms of trade in the early 1980s, but it was not until 1986 that the index again stood at 100, largely due to higher rubber prices.

Since Liberia is such a highly import-dependent economy (especially with regard to manufactured goods and industrial inputs), the decline in its terms of trade has been a major cause of the economy's problems. The need for an uninterrupted supply of essential imports has placed an increasing burden on the export sector.

1.1.3 Public finances

The relative improvement in overall economic performance, as reflected by the stabilization of GDP, is not reflected in a comparable improvement in Government finances. Table 1.2 shows that there has been an increase in the GOL budget deficit over the period 1982-1988. The overall deficit, on a commitment basis, rose from L$91.3 million in 1982 to L$156.7 million in fiscal year 1987, the last year for which full information is available. The available information shows that, although total revenue has returned to the levels of the early 1980s (reportedly attributed to improvements in the taxation and revenue collection systems), the amount received in grants from foreign donors has dropped by over 50 per cent, from L$41.4 million to L$19.5 million. The 1989 budget foresees a continuing growth of revenue to L$280.8, without presuming any significant rise in the amount received in grants from foreign donors.

Table 1.2: Selected data on central government operations
(in million Liberian dollars)

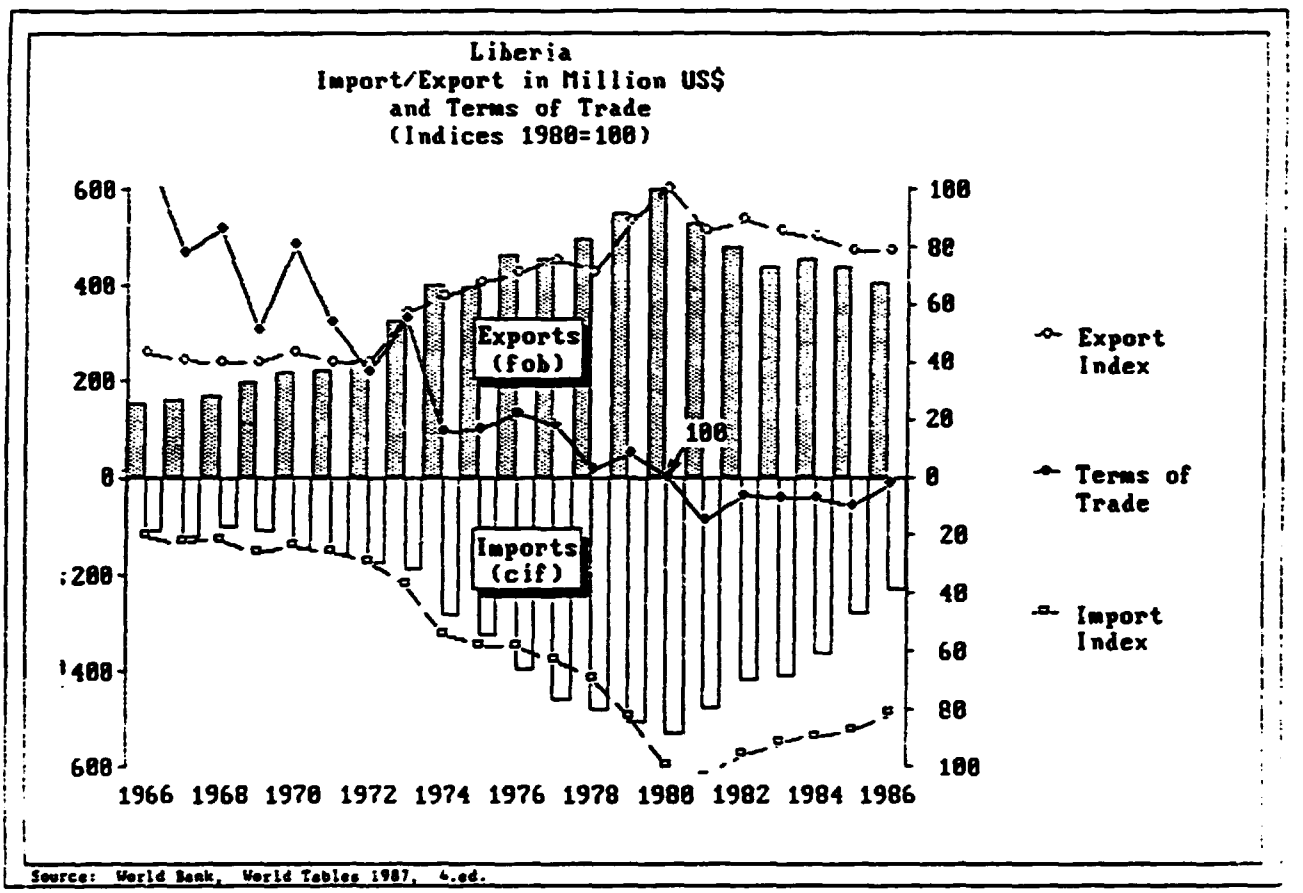
	FY 1982	FY 1987	FY 1988 (est)	FY 1989 (GOL budget)
Total revenue and grants	279.3	210.4	240.9	280.8
Total expenditures	370.6	367.1	418.4	385.9
Overall deficit	91.3	156.7	177.5	105.1

Source: Ministry of Finance.

The rise in expenditure is mainly due to rising interest payments and to non-budgetary expenditure included in the budget figures. According to the Ministry of Finance, the former rose from US$37.8 million in 1982 to US$140.8 million in 1988.

In 1988 extrabudgetary expenditures consisted mainly of loan repayments and interest payments to various Liberian banks amounting to L$66.2 million. A different Ministry of Finance/IMF source identified additional extra budgetary spending amounting to L$145.4 million. Extrabudgetary operations are a prominent element in the GOL's financial management; in 1988 the most important means of financing these operations were: debits of tax severance at banks (the banks collect tax on behalf of GOL), medium-term loans at the National Bank of Liberia, and fees paid by the logging and petroleum-refining industries.

Diagram 1.2


Liberia
Import/Export in Million US$
and Terms of Trade
(Indices 1980=100)
600
400
200
0
200
400
600
100
80
60
40
20
0
20
40
60
80
100
Exports
(fob)
Imports
(cif)
100
Export
Index
Terms of
Trade
Import
Index
1966 1968 1970 1972 1974 1976 1978 1980 1982 1984 1986
Source: World Bank, World Tables 1987, 4.ed.

There has been a marked decline in development expenditure through the years, from L$96.4 in 1982 to L$23.7 million in 1988. Wages and salaries in the Government sector have also decreased significantly, partly the result of a long wage freeze, which has tended to make it difficult for the GOL to attract qualified personnel. The 1989 budget shows that overall Government expenditure is expected to decrease, although spending on development and the wage bill will not. The Government projects a slight increase in interest payments, but no extrabudgetary spending.

The budget deficit was financed largely through the issuance of L$5 coins and through advances by the National Bank of Liberia (NBL). The evident lack of confidence in this Liberian currency, together with the recurring balance of payments deficits, led to a strongly reduced availability of US dollars. A parallel market for US currency emerged, creating a two-tier financial system in which the US dollar is traded at a substantial premium, although the official rate of exchange is still 1:1. By December 1988, the US dollar was trading at 2.15 Liberian dollars in the parallel market. Only a small share of transactions - those controlled by the authorities - now takes place at the official rate.

1.1.4 External debt and the balance of payments

As shown in Table 1.3, the external debt grew slowly until the mid-1970's, but then trebled in the latter half of the decade, reaching US$600 million by 1980. The reduced rate of growth in the 1980s is in part attributable to decreasing confidence in the economy and in the Government on the part of external lenders. Nevertheless, total debt rose to US$1,626.2 million by 1987, approximately 150 per cent of GDP. The debt service ratio increased from 13.4 per cent in 1982/83 to 40.9 per cent in 1985/86 and 57.2 per cent in 1987, in spite of several reschedulings. Even a much lower rate would be likely to cause severe problems in the Liberian economy, which needs to retain as much as possible of its foreign exchange earnings to finance essential imports. Not surprisingly, therefore, large arrears have accumulated since the mid-1980s. The estimated external arrears amounted to US$617.7 million in 1987 and are projected to reach US$890.3 million in 1988 (see Annex Table 2). In fiscal year 1987, arrears to the IMF alone were estimated at US$266.3 million, while arrears to other multilateral organizations, including the World Bank, amounted to US$72.9 million. Since 1986, all lending by the IMF to Liberia has been suspended and the World Bank closed its office in Monrovia.

The increasing debt-service burden is the main factor responsible for the overall balance of payments deficit, which rose from US$73.6 million to US$168.2 million over the period 1983/84-1987. Thus, while the trade surplus rose from US$20.8 million to US$56.3 million, the current account deficit grew from US$26.5 million to US$47.7 million, mainly as a result of increasing interest payments. The deficit on the capital account (which includes debt amortization) increased from US$47.1 million to US$120.5 million over the same 1983-87 period. Debt servicing thus offset all the gains generated by the surplus of exports over imports.

It should be noted that, with regard to the trade balance, the growth of imports is much faster than that of exports. This seems partly the result of renewed confidence in the economy, as the decrease of GDP bottoms out and demand for imports recovers. It is by no means clear, however, that the growth in imports has led to an equivalent improvement in the availability of goods needed for renewed economic growth such as inputs, equipment, or spare parts.

Table 1.3: External public debt
(in million US$)

	1982/83	1983/84	1984/85	1985/86	1986	1987
Disbursed and outstanding	870.0	957.0	1,070.0	1,280.0	1,389.7	1,626.2
Debt service	62.0	95.0	130.0	187.0	218.3	244.5
Interest	(47.0)	(47.0)	(61.0)	(79.0)	(86.3)	(103.1)
Principal amortization	(15.0)	(48.0)	(69.0)	(108.0)	(132.0)	(141.4)
Debt service (as % of exports of goods and nonfactor services)	13.4	20.0	27.3	40.9	50.1	57.2

Source: Data provided by the ministries of Finance, and Planning and Economic Affairs.

1.2 Recent policy changes and their impact

In recognition of the deteriorating economic situation, the GOL has instituted a number of policy initiatives since the mid-1980s. These include the establishment of the Economic and Financial Management Committee (EFMC) in 1985, the preparation of the Economic Recovery Programme (ERP) in 1986, and the signing of a counterpart management agreement with the US Government. Under this agreement, seventeen operational experts (the so-called OPEX team) were sent to Liberia in 1988 to help improve the financial management of the public sector.

1.2.1 The Economic and Financial Management Committee (EFMC)

The EFMC is chaired by the Minister of Finance. Membership includes the Minister for Planning and Economic Affairs, the Governor of the National Bank of Liberia, the Director-General of the Budget, the Minister for Presidential Affairs, and the Ministers of Agriculture, Justice, and Lands, Mines and Energy. Its stated objective was to "...ensure the enforcement of the (revenue and finance) laws and the implementation of ...fiscal policies".

Although the EFMC was charged with responsibility for economic and financial policy co-ordination, and with overseeing the Bureau of Concessions and State Enterprises, it can point to only modest achievements. The Committee recommended an Executive Order which would provide strong enforcement instruments for budgetary control, although the version of the Executive Order that actually became effective did not deal directly with this issue. Its activities have for the most part been limited to what has been described as "crisis management".

1.2.1 The Economic Recovery Programme (ERP)

The ERP was drawn up in 1986 and is based largely on the 1981-1985 Plan. Its main objectives are as follows:

- To improve the economic status of the population and expand employment in the economy;
- To improve the Government's ability to meet its financial obligations, particularly with regard to development objectives;
- To improve the productivity of Liberian farmers in the main food and cash crops;
- To improve the management of the public sector as a whole and reduce the role of the State in economic activity, among others, by privatizing public enterprises;
- To diversify and expand the industrial base;
- To develop indigenous entrepreneurial capabilities, particularly in the small- and medium-scale industries.

In pursuit of the above objectives, the Government gave assurances to the private sector that:

(a) Existing policies governing remittances of profits and investments will continue in line with the liberal policies of the Government;

(b) The legal system and applicable labour laws will protect the legitimate interest of investors, as well as encourage the expeditious solution of labour disputes;

(c) Agreements and contracts between the Government and private enterprises will be strictly adhered to and implemented in a manner promoting the effective operation of private sector enterprises; and

(d) The Investment Incentive Code (see Section 2.3.1) will be adhered to and administrative delays in the approval of projects reduced.

The measures for promoting enterprises in the private sector include the provision of economic information to investors, protection against excessive foreign competition, and preference to local industries in the Government purchasing programme. Other important components are: entrepreneurship development, improved investment promotion facilities and investment incentives, and increased emphasis on promoting small- and medium-scale enterprises. Table 1.4 shows the projected distribution of ERP funds among programmes. It is clear that foreign sources of finance are expected to cover the larger part of expenditure under all sectoral heads.

Through the ERP, output, productivity and debt servicing are to improve as a result of the recommended correction of the public finances. The general improvement in economic performance and public sector management, in turn, is to stimulate the inflow of external financial resources. In other words, the ERP recognizes that correction of the public finances is a precondition to economic recovery and the resumption of growth and development in the economy.

With regard to agriculture, the most important sector, the ERP seeks "to increase the volume and value of all exports and to reduce the quantity of food imports in order to earn and save more foreign exchange". The value of agricultural exports can be increased through increased production and improved marketing practices, as well as through additional processing of additional processing of agricultural products.

The ERP's agricultural policies are based on Liberia's 1986 Green Revolution programme, the primary objective of which is the attainment of food self-sufficiency. Its stated goals are to "recreate an awareness of the importance of agriculture to national well-being and to increase agricultural productivity. The overall goal is that Liberia as a nation will feed herself and produce export crops that would contribute to the growth of the national economy."

In implementing the Green Revolution, the following approaches are envisaged: 1) establishment within each county of a unit which will provide supervised credit packages to farmers; 2) involvement of agriculturally trained graduates with a college degree, or its equivalent, as farmers in their county of origin; 3) infrastructural development; and 4) development of "nucleus estates" to group crops that are appropriate for the region.

Under the heading of Industrial regeneration, the ERP includes the following proposals:

- The privatization of state enterprises to enhance their efficiency and productivity, and to reduce their dependency on Government finance;

- The commencement of a study to improve rubber processing capacity, including that of the Rubber Corporation of Liberia (RCL);

- Support for the expansion of the manufacturing of oil palm products and other food products in order to save foreign exchange;

- Support to the forestry sub-sector to increase processing of wood products for both the domestic and export markets, which would both save and generate foreign exchange.

The ERP programmes cannot be successful unless there is a strong commitment on the part of the Government to improve its institutional infrastructure and financial situation. Even if these can be achieved, the programmes are likely to exceed the country's presently available means. Due to the lack of confidence in the GOL and the economy, foreign sources of finance - which are essential for all ERP programmes - have dried up. A 1988 Economic Commission for Africa (ECA) mission report suggests that, given the financial difficulties and the shortage of qualified manpower, pilot projects should take the place of attempts at a general overhaul of the economy. Reviewing the restructuring effort, the ECA mission report makes the following comments:

"Given Liberia's structural imbalance, implicit in many things, including lack of integration between the monetary and subsistence sectors, we are convinced that, in addition to efforts aimed at the iron ore, rubber and forest sectors - which in the past were the main sources of growth and foreign exchange earnings to the country and are likely to remain so even for some time to come - there is an urgent need for diversification efforts aimed at developing additional exports in the agricultural and agro-industrial sectors and to substitute for many of the existing food imports. This is indeed the number one priority. Agro-processing and agro-allied industrial development is at its infancy, and very little has been done so far to hook up agriculture to industry; but this must be done in order to create enlarged demand for the products of agriculture. The re-ordering of food tastes and habits must also be accomplished in order for greater food self-sufficiency to prevail, such that the country will begin to consume what it produces locally. The number two priority is rural development. Liberia is basically rural, hence the transformation of the rural sector forms an inevitable basis of national development since only a prosperous rural sector can provide a self-reliant base for the economic development of Liberia."[1/]

As Table 1.4 shows, a total of L$2.4 million is to be made available from both GOL and foreign sources for these purposes in 1986/87 through 1988/89.

Table 1.4: Economic Recovery Programme contingency plan - amounts to be allotted
(in millions US$)

Sectors / Projects	1986/1987 GOL	1986/1987 FOR	1987/1988 GOL	1987/1988 FOR	1988/1989 GOL	1988/1989 FOR
Agriculture	9.6	25.8	3.1	25.1	3.1	25.1
Industry	-	1.0	0.2	0.5	0.2	0.5
Energy	-	-	1.0	12.0	1.0	12.0
Transport and communications	4.3	19.0	2.8	19.3	9.8	15.4
Water and sewer	-	5.0	0.4	3.6	0.4	3.6
Regional and urban development	0.5	2.8	0.5	2.8	0.5	2.8
Education and training	1.4	3.1	1.4	9.0	1.4	9.0
Health and social welfare	0.7	9.3	0.4	9.3	0.3	-
Manpower	0.3	2.5	0.6	3.7	0.6	3.7
State enterprise	-	0.5	-	0.5	-	-
Housing[a/]	-	-	-	-	-	-
Total	16.8	69.0	10.4	90.2	17.3	72.1
Contribution to international organizations	1.1	-	1.1	-	-	-
Grand total	17.9	69.0	11.5	90.2	17.3	72.1

Source: Economic Recovery Programme
a/ Funded by National Housing Authority
GOL = Government of Liberia contribution
FOR = Foreign sources of finance

1/ UN Economic Commission for Africa - Liberia, Report of an ECA Fact Finding Advisory Team, 16-30 January 1988, ECA/RA/1988/1.

Little information is available regarding the achievements of the ERP, which is not even mentioned in the most recent publications. The ECA concludes that its success has been "very limited" so far and that "non-implementation" has been a serious problem.

1.2.3 The Operational Experts Team (OPEX)

The OPEX team was brought in by the EFMC to assist in budgeting, expenditure control, financial flows and accountability, including the development of a management information system. Its achievements include reducing payment arrears (including civil service wage payments), improving the system of public accounting, ending central bank financing of Government activities, improved revenue collection, and establishing an information system for expenditure control. However, OPEX did not accomplish its primary goal of inducing the Government to control its level of total expenditures. Provisions in the OPEX agreement calling for a halt to extrabudgetary revenues and expenditures have not been implemented. Other terms of the agreement, such as those dealing with budgeting, auditing and restructuring of major public enterprises, also were not carried out during the period of OPEX involvement.

1.2.4 Current direction of policy

The Government of Liberia recently announced a strongly-worded policy for dealing with extrabudgetary revenues and expenditures, in recognition of its increasingly serious consequences for the Liberian economy, as has been emphasized by its bilateral and multilateral aid partners. President Doe's Annual Message to the Legislature, on 27 January 1989, and later statements emphasized that revenues and expenditures are to be contained within the budget, and that such "financial discipline" was to be enforced.

The President's annual message also reaffirmed the Government's commitment to privatize certain state enterprises, and to establish a Business Development Fund to provide loans to small businessmen.

Another recent policy measure announced by the President of Liberia in January 1989, which directed all exporters to use the commercial banks to open Letters of Credit, should have the effect of identifying the quantity and value of total exports and total proceeds from them. This should result in an increase in the amount of foreign exchange available for essential imports. However, the real impact of this scheme depends on the introduction of a control system that prevents under-invoicing in an effective way.

1.3 The international and regional contexts

1.3.1 Bilateral development assistance

The ERP's dependence on foreign financial resources shows the importance of international development co-operation. Annex Table 3 shows that the United States is by far the largest aid donor, followed by the Federal Republic of Germany and Japan. This dependence on bilateral, and to a lesser extent and multilateral, aid has exposed the GOL to increased pressure with respect to its economic policies. Mounting arrears on previous borrowing caused a number of donors to suspend disbursements in 1985-1986. USAID disbursements (with the exception of food aid) were suspended during 1986.

Available information suggests that official development assistance was down to US$30 million in 1987. Aid agreements were signed with Romania and Canada and with the European Community (EC) under Lomé III. Other agreements were made in 1988 with Japan, France and the USSR.

1.3.2 Relations with multilateral institutions

The most important multilateral financial organizations to which Liberia belongs are the IMF, the World Bank and the African Development Bank (ADB). Liberia benefits from biannual Article IV consultations, but presently does not receive financial assistance from the IMF, which in 1986 declared Liberia ineligible for further IMF resources due to the accumulation of payment arrears. Liberia's relations with the World Bank group are also strained; due to the accumulation of arrears, the Bank has suspended disbursements to development projects which it had previously financed. Liberia is also in arrears in payments to the ADB.

Although Liberia is not a member of UNIDO, a number of industrial development projects have been initiated in the country. The Annex contains lists of both UNIDO's operational and pipeline projects. In 1988, a UNIDO sponsored seminar was held in Monrovia to discuss industrial development problems within the context of the Industrial Development Decade for Africa. Recommendations from the seminar included improvements in policy-making and execution, a review of the tariff structure, and a speeding up of the adoption of the revised Investment Incentive Code.

Within the Fourth UNDP Country Programming Cycle (1987-1991) multilateral technical assistance to the industrial sector is to be provided through the Ministry of Planning and Economic Affairs (MPEA), state enterprises and the private sector, as well as in the fields of upgrading technical and managerial skills and a pilot employment project.

1.3.3 Regional economic co-operation

The growth of regional markets could play an important role in the future development of Liberia's economy, since the domestic market is too small for a strong expansion of the manufacturing sector. Liberia is a member of a number of regional organizations, including the Economic Community of West African States, the Mano River Union, West African Clearing-House, and West African Rice Development Association.

(i) Economic Community of West African States (ECOWAS)

ECOWAS was established in 1975 by 16 countries in West Africa. The main objectives of ECOWAS are the achievement, first, of a customs union and, later, of a full common market among the member states. The intention is to increase intraregional trade and reduce the members' relative volumes of trade with the industrialized countries. The ECOWAS treaty provides for harmonization of policies among the member states in a number of sectors including agriculture, industry, transport and communications.

A Fund for Co-operation, Compensation and Development has been set up both to promote development in the poorest member states and also to compensate those whose economies are adversely affected by the activities of ECOWAS. The Fund has financed a number of projects through contributions made by the member states on the basis of per capita income.

Like other regional integration schemes, especially in developing countries, ECOWAS operations are hampered by the fact that neighbouring countries tend to produce competing goods in the primary sector which reduces intra-regional trading possibilities. Other constraints include simultaneous membership by member countries in a number of regional schemes and the large number of currencies which complicates transactions in the region.

The relationship between Liberia and ECOWAS is generally good. Although it continues to be indebted to the ECOWAS Fund, eight of the 136 investment projects in the ECOWAS Economic Recovery Programme are located in Liberia.

(ii) The Mano River Union (MRU)

Formed initially by Liberia and Sierra Leone in 1973, the Mano River Union was joined by a third member, Guinea, in 1980. Its aims include the elimination of barriers to trade between members, co-operation in transport, agriculture and industry, and the formation of a customs union. The MRU has not been very active in recent years, partly because of its limited financial resources. However, the member states co-operated in the establishment of a glass factory in Liberia, which is to serve the MRU market, and the other countries are to refrain from establishing competing firms. Relations with MRU members are cordial and Liberia is current with its financial contributions to the Union. A maritime trading institute, set up by the MRU in Morovia, has been taken over by the Liberian Government and is to be assisted through a programme formulated by UNIDO for this purpose.

(iii) West African Clearing-House (WACH)

The Central Banks of twelve countries established WACH in 1975. Its main objective is to settle payments for goods and services in national currencies on a multilateral basis by using the West African Unit of Account. Due to delays in settling the net balances, activity within WACH has recently decreased. There was no information on Liberia's role in the WACH.

(iv) West Africa Rice Development Association (WARDA)

Established in 1970 with headquarters in Liberia, WARDA includes all ECOWAS members except Guinea-Bissau, Ghana and Cape Verde. The principal objective is to make West Africa self-sufficient in rice production. Arrears by some members in recent years have negatively affected WARDA operations. WARDA has probably not been intensively involved in Liberian agriculture. The organization is not mentioned in recent documentation dealing with the rice-cultivation programme under the ERP. Yet, according to the ECA, Liberia could become "the breadbasket of West Africa" if rice growing were given proper attention. It would also help to strengthen the raw material supply of domestic cereal mills.

CHAPTER 2

THE ENVIRONMENT FOR REHABILITATION: RESOURCES, POLICIES AND INSTITUTIONS

The successful rehabilitation and regeneration of Liberia's manufacturing sector depends, to a large extent, on the creation of a radically improved environment for manufacturing enterprises. The Economic Recovery Programme (ERP) shows an awareness of the need for such improvement.

The number of policy issues that need to be addressed is quite wide ranging, and include the following:

- The natural resource base, including its renewal and maintenance;
- Physical and social infrastructure;
- Industrial policy, including its legal and institutional base;
- Enhancing the role of the private sector, which is expected to be the main source of renewed growth in manufacturing;
- Strengthening the role of the institutions involved in industrial development and regeneration;
- Improving the macro-economic policy environment within which industrial regeneration can occur. The key issues under this heading are: control of public finances; the currency and foreign exchange rate regimes; pricing policy; and credit and interest rate policies.

2.1 The natural resource base and its renewal

As Chapter 3 will show, the Liberian manufacturing sector's linkages to the domestic raw material base are not very strong. But the country has a very large, underutilized natural resource potential, and it is essential for the regeneration of the manufacturing sector to use this potential more efficiently.

Reference has already been made in Chapter 1 to the decreasing productivity of existing iron ore mines. There are large unexploited deposits in the country, but the present world market prices for iron ore are too low to make this exploitation viable. Two out of four mines have been closed down, and the companies working the other mines have made drastic cuts in production and employment. It is likely that the largest remaining mine at Mount Nimba will also have to be closed down, as deposits are almost exhausted. Ore is washed and pelletized prior to treatment, but it is not processed otherwise, and both the world market and the domestic economic situation make it highly unlikely that other processing facilities will be established.

Rubber is cultivated both by large foreign companies and Liberian smallholders, with the former controlling about half of the total area under rubber. Processing takes place only to the extent needed for transport overseas. Rubber is the most important foreign exchange earning cash crop (see Annex Table 1), and production and prices have increased considerably since the early 1980s. The GOL and bilateral and multilateral organizations have been involved in raising the productivity of smallholder rubber plantations. It would be appropriate to follow up on these efforts and to investigate the possibility of establishing secondary processing activities within the rubber subsector of Liberia.

In the new Investment Code, the GOL has declared its intention to pursue such secondary processing in a serious manner. It has identified five types of products that could be produced with Liberia's vast rubber resources. These are:

- all types of tyres and tubes
- inflatable rubber products
- automotive and other moulded rubber parts
- medical and surgical rubber products
- rubber-made sporting goods.

It would also be appropriate to investigate the extent to which foreign enterprises could be encouraged to co-operate with such downstream industries. This would lead to a considerable increase of domestic value added in the rubber sector.

Wood is Liberia's number three export. Almost half of the country is covered with forests. The largest forest reserves are found in the northwest and southeast of the country, areas where, apart from logging, few other monetized economic activities take place. Logging is far more important than wood processing, and the economy of these remote areas would benefit considerably if local wood were processed to a greater degree.

There are indications that the Liberian Government is cognizant of the need to reduce the quantity of unprocessed round logs that are exported from the country and to increase the processing of such resources. Regulation 14 of the Forestry Development Authority (FDA), dated March 1987, stipulated that 20 per cent of exported timber should be processed. Because of perceived difficulties with an immediate acceptance of such a target by timber exporters, this target was amended by Regulation 15, dated September 1987, stating that the 20 per cent level would be reached only by 1993.

Support for increased processing is evident at the highest level. In his State of the Nation speech on 27 January 1989, President Samuel K. Doe underlined the importance of processing for employment creation and the improvement of the public finances: "[If] exporters process a minimum of 15 per cent of their logs locally, employment opportunities will increase and the Government will gain more in revenue." Nevertheless, progress under this heading has been very slow to date. The 1986-1987 report of the FDA shows that only 1.9 per cent of timber exports was exported in processed form. Progress toward the objectives of increasing value added, promoting employment, and increasing Government revenues from its timber subsector can be made if the Government adheres strictly to its processing regulation and resists the temptation to allow exporters to escape their obligations.

Liberia is rich in cultivable land. The most important food crops are rice, cassava, bananas and oil palm fruit. Most of the crop is consumed locally. However, the monetized sector of the economy (urban consumers, processing units) is to a large extent dependent on imported foodstuffs. In order to increase domestic supply (which would save foreign exchange), a number of problems would have to be solved, including low productivity of traditional farming, low product quality, low official buying prices for rice, and transport and marketing bottlenecks. Productivity and product quality issues have been addressed by several projects, such as the smallholder Rice Feed Development Project and the county-level Agricultural Development Projects under the ERP, but such projects can only bring about widespread agricultural development if more financial resources and qualified manpower are made available, and if there is a serious commitment to agricultural development as a long-term priority.

The OAU, in its declaration on the 1980s Industrial Development Decade for Africa, stressed the importance of agro-based manufacturing and the need for the continent to tackle seriously the processing of its own natural resources. Liberia has subscribed fully to the OAU approach. To this end it is imperative that Liberia maintains its renewable natural resources so that they will continue to provide the inputs to an agro-based manufacturing sector. This involves sustaining the productivity of the country's forests and fisheries and continued serious attention to the development of the rural economy.

2.2 Physical and social infrastructure

The regeneration of Liberia's manufacturing sector also calls for improvement in its physical infrastructure. In particular, the transport and communications networks will require improvement if the benefits of industrialization are to be spread more evenly throughout the country. The improvement of the educational infrastructure, especially in relation to management training, is also a matter requiring immediate attention.

2.2.1 Transport, communications and energy

Liberia's transport infrastructure (see Map) is largely geared to serving the rubber plantations and iron ore mines. Over 90 per cent of the roads are unpaved, and the road infrastructure is particularly poorly developed in the south-western half of the country. The sole purpose of the railways is to link iron ore mines to ports. The ports, too, are mainly equipped for ore exports. Given the fact that most of the country's industrial enterprises are located in or near Monrovia, where infrastructure and facilities are far better developed than elsewhere, the shortcomings of the transport infrastructure are, in most cases, not immediate obstacles to rehabilitation.

Medium- and long-term planning, however, should give sufficient attention to the upgrading and expansion of the transport network. This would ensure a more regular supply of inputs to factories, and would enable industry to obtain a far larger share of the country's natural resources. It would also enable the location of appropriate industries in rural areas and secondary urban centres, and thus help to increase employment and incomes outside the Monrovia area.

Improvements in the postal and telecommunications services and in electricity supply should receive high priority attention. Upgrading these services is a short-term imperative. Presently postal services and

telecommunications function very poorly and electricity supply is irregular. Hydroelectric generating capacity (which accounts for one fourth of total capacity) often connot be used during the dry season. The reasons for the poor performance of the existing hydroelectric plants during the dry season are not clear, but they should be identified, and appropriate action taken. Considerable potential exists for hydroelectric energy, and efforts should be made to seriously assess the possibilities of increasing capacity, building on earlier co-operation proposals with Côte d'Ivoire and the Mano River Union.

2.2.2 Management training

Although the educational and training standards are higher than in most other countries in the region (primary school enrollment stood at 76 per cent in 1985, but was down to 53 per cent in 1988), there is a serious shortage of skilled technical and managerial personnel at the middle and higher levels. The GOL also suffers from a shortage of personnel for economic policy-making and implementation, as shown by the continuing dependence of enterprises and government institutions on expatriates. The whole issue of management training for both the public and the private sectors needs to be tackled in a systematic way. The extension and rehabilitation of existing courses and institutions will provide part of the solution. However, it is clear that if management within manufacturing enterprises and planning within the public sector are to be significantly improved, then education and training courses at the University of Liberia, the Liberian Institute of Public Administration, and other institutions will have to be geared to Liberia's conditions and needs. There is little evidence to suggest that training in these institutions at present is geared to the needs and conditions of the domestic economy.

Thus, while efforts at providing general basic education should continue, special efforts should be made to provide training and educational facilities that can teach the skills needed by Liberian business and economic policy-making. A step in this direction is the expansion of the WVS Tubman College of Technology, for which technical assistance is provided by the EC.

2.3 Industrial policy

There is no official statement or policy document as such which describes Liberia's overall approach to industrialization. As Section 3.7 shows, the measures that have been formulated are quite superficial. The most pertinent document is the Investment Incentive Code, which enumerates the kinds of economic activities the Government wishes to encourage and the types of incentives it will offer to investors in industry. The Code is, therefore, the most important guideline available to potential investors in Liberia, whether they be domestic or foreign entrepreneurs. It thus merits detailed examination.

2.3.1 The Investment Incentive Code (IIC)

The first Investment Incentive Code of Liberia was adopted in 1966 and amended in 1973. During this period the country's Open Door Policy was at its peak, and thus the emphasis was primarily on the attraction of foreign capital. In 1985 the Code was revised once more, this time against a background of economic crisis, declining investment, and a growing realization on the part of Government that having "closed the door" after the 1980 coup, the resulting dramatic decline in inflows of foreign capital had seriously

damaged the growth prospects of the economy. The 1985 revision of the Code - which has yet to be approved and adopted - seeks to reflect the new economic realities and provides, therefore, a more realistic approach to the industrialization process.

The Code sets out to encourage the establishment of industrial enterprises which:

(a) utilize, to the highest possible extent, Liberian manpower at all levels and contribute to advancing their skills through training schemes (on-the-job and otherwise);

(b) utilize raw materials and products of Liberian origin to the maximum possible extent;

(c) utilize as much as possible ancillary activities available in the productive and service sectors of Liberia;

(d) contribute to making Liberia independent of imports of basic necessities, as far as it is economically feasible;

(e) contribute to the expansion and diversification of Liberia's exports; and

(f) contribute to increased employment opportunities all over the country.

The basic objectives of the Investment Incentive Code of Liberia remain unchanged even after the 1985 revision. Both the revised and the earlier versions of the Code contain provisions which are designed to enhance opportunities for stimulating the industrialization process. The Open Door Policy remains the principal mechanism through which the process of industrialization is to be achieved.

The main difference between the 1985 revised Code and the previous one is in terms of approach rather than objectives; the difference lies in the policy instruments used to achieve the overall objective rather than in the objective itself.

Under the previous Code, investment incentive contracts were awarded to any industry which used raw materials of Liberian origin and provided job opportunities for Liberians. There was no prioritization of industries on the basis of their contribution to the industrialization process.

The revised Code of 1985 seeks to further the industrialization process through a more systematic approach. Priority sectors - agriculture and manufacturing - have been emphasized. Within the manufacturing sector, enterprises which use raw materials of Liberian origin, and have potential linkages to other sectors of the economy are to be awarded additional incentives.

Moreover, as a part of the overall strategy for promoting industrialization, the integration of the rural sector with industry is a major focus. Industries which have chosen to locate outside Monrovia and within specified rural areas will enjoy maximum incentives.

The incentives offered under the Code should prove very attractive to potential investors. They come under the headings of customs duty benefits and income tax benefits, as well as preferential leasing arrangements and accelerated depreciation allowances.

For enterprises that are granted investment incentive contracts under the Code, the customs duties benefits include exemption from import duty of up to 90 per cent of the dutiable value of approved imports of machinery and equipment - "approved", in this instance, being interpreted as machinery and equipment with more than three years life - and exemption of import duty of up to the same amount on approved imports of raw material, semi-finished products and other inputs used in production.

The income tax benefits include exemptions on profits reinvested into fixed assets and on 50 per cent of the taxes that would otherwise be paid on the remaining profits. There are to be full rebates on import duties, excise taxes, and taxes on manufactured export earnings.

One or more additional benefits from the following list of benefits may also be granted to investors who have been awarded investment incentive contracts:

(a) lease of land at preferential rates in a Government-owned industrial park, together with assistance in provision of infrastructural facilities;

(b) support in securing loans or equity capital, especially for small enterprises;

(c) reasonable tariff protection;

(d) provision for carrying losses forward;

(e) accelerated depreciation allowances; and

(f) purchases by Government agencies, subject to quantity and quality conditions.

The Code acknowledges the pivotal place that foreign investment has always played in the development of the economy. It underlines the Government's intention to welcome further inflows and states that enterprises in Liberia can be fully owned by foreign capital, can be partnerships involving foreign and Liberian private capital, or can be joint ventures involving foreign investors and the limited number of remaining Government owned enterprises. The Code reiterates the GOL's commitment to pursue the Open Door Policy in "all its forms and ramifications" since it ensures "an unreservedly profitable climate for both local and foreign investments."

In the immediate aftermath of the 1980 coup, a number of local private enterprises and other locally-owned assets were confiscated by the Government. The new Investment Incentive Code goes out of its way to allay fears that such a practice would be repeated in the near future. It states categorically that all investments, whether local or foreign-owned, are fully protected by law and that private enterprises cannot be nationalized under any circumstances.

The National Investment Commission (NIC) was and continues to be the principal institution in Liberia responsible for the promotion of investment. NIC is also responsible for the awarding of investment incentive contracts as well as monitoring the performance of the beneficiaries under the Contract. If adopted and implemented as designed, the revised Investment Incentive Code of 1985 should prove to be an important stimulus to investment and rehabilitation and will provide a very good basis for the promotion and regeneration of industry and, indeed, the entire economy.

By emphasizing the promotion and regeneration of those manufacturing industries which have linkages back to agriculture and other activities in the primary-producing sector, as well as linkages to other industrial activities, the revised Investment Incentive Code should help to promote development and regeneration across a whole range of economic sectors.

At the time of writing, the 1985 Investment Incentive Code was still awaiting ratification and adoption. The crucial condition will be the manner in which the Code is implemented. It is imperative that all Government ministries and agencies involved in its implementation co-operate with each other. The implementation of the incentives available under the Liberia Industrial Free Zone Authority - established in 1975 to attract export-oriented investments - was dogged by the effects of conflicting objectives and inter-agency rivalries. In order to ensure that the new Investment Incentive Code acts as an instrument for the regeneration of Liberian manufacturing industry, co-operation must be the watchword among the concerned Government ministries and agencies.

2.4 Strengthening the role of the private sector

Before 1980, the stimulus to economic growth in Liberia was provided mostly by the private sector. However, with the military government that came to power in 1980, political uncertainties developed and investors' confidence fell. Despite assurances by the Government to investors that there would be no major shift in policy toward the private sector, there was a huge outflow of capital and a decline in overall investment. Additionally, enterprises of some prominent Liberians were confiscated. As a result of this, and contrary to declared Government policy, the public sector came to play a more prominent role. In the absence of sufficient capable staff, especially managers, and because of excessive Government interference and financial mismanagement, most public enterprises were soon experiencing losses.

More recently, however, the Government, in an attempt to restore confidence in the economy, has opted for a more positive attitude towards the private sector. All confiscated property has been returned to its owners. In 1986, a law was enacted giving the President the authority to devise plans for the privatization of certain state enterprises which were considered inefficient and unproductive. A Presidential Commission for privatization was then appointed to identify enterprises suitable for privatization. Moreover, the level of interference in the management of public enterprises has been significantly reduced.

Among others, the Liberian Petroleum and Refinery Company (LPRC), the Liberian Palm Product Corporation (LPPC), the Decoris Palm Corporation (DPC) and Air Liberia were identified for privatization. However, to date, privatization plans have not been implemented because some of the corporations which were chosen are considered vital entities for Government revenue generation. (As such, unfortunately, they are also closely linked with the very serious issue of extrabudgetary revenue collection and expenditure - see Section 1.1.3.) Others were not privatized because investors have not, so far, expressed an interest in acquiring them.

2.4.1 Support to small and medium-scale enterprises (SMEs)

Support to SMEs which are wholly-owned by Liberians is another attempt by the Government to promote private sector development. Some 900 SMEs were identified in 1986, 360 of them outside Monrovia. The low capital thresholds for starting such enterprises, along with their widespread income and

employment generating effects, make them useful vehicles for regeneration efforts. SMEs in the manufacturing sector are examined more extensively in Chapter 3.

Emphasis on the development of small- and medium-scale enterprises is intended partly to address the problem of the lack of Liberian entrepreneurship, which is singled out as one of the constraints on private sector development. At present, many of the private sector enterprises are run by expatriates. The shortage of capable entrepreneurs, managers and technicians reflects, to a large extent, the shortcomings of the education system (see Section 2.2.2), but the absence of an "entrepreneurial tradition" is also an important factor. Only a comprehensive manpower development plan could, in the long run, guarantee a successful "Liberianization" of the economy. In the short to medium term, continued reliance on expatriates seems unavoidable.

One response to the need to address the problem of Liberian entrepreneurship was the creation of a Small Enterprise and Financing Organization (SEFO) through the sponsorship of the United States Agency for International Development (USAID). SEFO was designed to develop project proposals and to provide managerial and technical assistance to SMEs. It can also fund project proposals which are approved. Because of the inadequacy of the capital base of SEFO, other institutions such as the Agricultural Cooperative and Development Bank (ACDB), the Liberian Bank for Development and Investment (LBDI) and, to a minor extent, the National Housing and Savings Bank (NHSB) were encouraged to participate in financing approved projects.

Despite the support given by various institutions, SME development is still in its infancy. Most of the projects have had a poor success rate to date. A key problem is the macro-economic environment which continues to adversely affect most businesses. The resulting low repayment rate of loans has caused most of the banks to withdraw from the schemes. Credit issues, including the role of the above-mentioned organizations, are more extensively dealt with in Section 2.6.4.

2.5 Strengthening the role of the institutions involved in industrial development and regeneration

Many Government ministries and agencies are involved in the promotion and regeneration of manufacturing industry in Liberia. For some, this role is central; for others it is more indirect. These ministries and agencies and their principal functions relating to industrial development are as follows:

Ministry of Commerce and Industry (MCI) formulates and co-ordinates commercial and industrial policy; it issues manufacturing licences as well as import and export licences. A representative serves on the NIC Board.

Ministry of Agriculture (MOA) designs and co-ordinates effective agricultural and development programmes. It liases with MCI in the issuance of import and export licences for food products.

Ministry of Finance (MOF) is responsible for taxation of enterprises and companies and for the formulation and co-ordination of private and/or joint venture investment programmes in the export sector. A representative chairs the Economic and Financial Management Committee and serves on the NIC Board.

Ministry of Planning and Economic Affairs (MPEA) is the principal economic planning agency and was responsible for drafting the ERP.

National Investment Commission (NIC) is responsible for investment promotion; it formulates and co-ordinates private investment programmes in the manufacturing sector. NIC drafted the Investment Incentive Code.

National Bank of Liberia (NBL) is the main institution involved in the formulation and execution of foreign exchange policies. It is the lead institution for on-lending IDA soft loans to the private sector through the participating financial institutions. NBL also formulates credit policies for the private sector. As the US$ is legal tender alongside the L$, the NBL cannot be considered to be fully capable of fulfilling its main official task, which is to regulate the money supply and promote monetary stability.

Liberian Bank for Development and Investment (LBDI) is the main instrument for financing investment in the Liberian agro-industrial sector, providing loans to public and private enterprises. Its functions have been widened recently to include commercial banking. Seventy per cent of LBDI's capital is foreign-owned.

Agricultural and Cooperative Development Bank (ACDB) was established with the sole function of financing agricultural developments. More recently, it has become involved in commercial banking operations.

Small Enterprise Financing Organization (SEFO) was established to give technical and financial assistance to small and medium-sized enterprises by financing their investment activities. A large part of its funds comes from IDA's soft-loan facility through the NBL. SEFO also receives technical assistance from UNIDO.

Bureau of State Enterprises (BSE) formulates and oversees policy involving the state enterprise sector and advises the EFMC (see Section 1.2). It also gives technical and managerial assistance to state enterprises.

Liberia Industrial Free Zone Authority (LIFZA) was set up in 1975 to attract investment in export-oriented manufacturing enterprises.

From the point of view of industrial development, the above-mentioned Government institutions suffer from a number of shortcomings:

- Insufficient co-ordination, and sometimes outright competition, between ministries and agencies that are partners in a project or in the execution of a policy;

- Policies and measures are not implemented in a consistent way. Private enterprises, for example, were not always granted the privileges they were entitled to under the old Investment Incentive Code;

- Serious shortage of, and uncertain career prospects for, capable personnel, especially at the higher levels of the public service;

- Extrabudgetary expenditure and revenue collection by a variety of entities (such as banks), making it very difficult for the Ministry of Finance to control the GOL's financial operations.

The public enterprises are a special problem. Although most economic activities are carried out by private entrepreneurs, mixed ownership and full public ownership also play a role. The most important examples of public ownership in manufacturing are the Liberia Petroleum Refining Corporation (LPRC) and the Liberia Produce Marketing Corporation (LPMC). The LPRC is a profit-making venture, but much of its profit has been used to cover extra budgetary expenditure by the Government. The LPMC has been criticized for its low producer prices and its deficiencies in administration, produce collection and marketing. In fact, a considerable part of the harvests of crops such as rice, cocoa and coffee whose prices are controlled is smuggled to neighbouring countries, where more favourable market conditions prevail. This narrows the potential resource base for food processing and - in the case of rice - leads to unnecessary increases in rice imports.

Common problems of public enterprises include interference in management and financial affairs and shortages of management personnel. IMF sources, moreover, speak of the extremely precarious financial position of the majority of public enterprises. No recent data are available, but transfers from the GOL to the public corporations (including development banks) are known to have amounted to L$125 million in the 1981/82-1985/86 period.

Attempts are being made under the ERP to restructure and streamline ministries, Government agencies, and public enterprises, and a number of the latter are to be privatized on the basis of recommendations from the Government's privatization committee. Much depends on the political will to carry out the announced reforms, and in the short to medium term the shortage of qualified staff will remain a serious obstacle. The UN system, including UNIDO, has provided various forms of assistance to public entities in the past, and the continuation of this kind of assistance will be crucial for the success of the restructuring attempts in the manufacturing sector.

2.6 Improving the macro-economic policy environment

A supportive policy environment at the macro-economic level is an essential precondition for the recovery of the Liberian economy and the regeneration of its manufacturing sector. Apart from the sector-specific area of industrial policy - already discussed under 2.3 above - the other key areas under this heading relate to:

- control of public finances;
- currency and foreign exchange rate regimes;
- pricing policy; and
- credit and interest rate policies.

It is appropriate to examine each of them in turn, describing the present policy stance under each sub heading, and making suggestions regarding appropriate modifications which, if implemented, would improve the general policy environment within which economic recovery and the regeneration of the manufacturing sector would be more easily promoted.

2.6.1 Control of public finances

The present critical state of Liberia's public finances has already been reviewed under 1.1.3. The key issue is extra budgetary public finances - that is, public revenues and public expenditures which have occurred but have not been included in the budget.

The mission is convinced that the GOL is very well aware of the need to reorder the public finances. This is particularly evident with regard to the reduction of expenditure. In his annual State of the Nation speech on 27 January 1989, President Samuel K. Doe stressed this point: "There is need to ensure that expenditures are contained within the limits of the budget. We must make sure that we spend only that which we have." There is an equal, or even greater, necessity to ensure that all expenditures made out of public monies and all revenues collected are included in the budget and that the practice of extra budgetary financing is ended.

2.6.2 The currency and foreign exchange rate regimes

If the productive sectors of the Liberian economy are to be regenerated, then a mechanism for the proper distribution and allocation of scarce foreign exchange must be established. In this context, exchange rate management has a key role to play and must be undertaken within the broad framework of a currency reform programme because of Liberia's dual currency system. An institutional framework to support and manage the appropriate exchange rate regime must also be created.

US currency has been used as legal tender since 1943, although it has circulated alongside small Liberian coins which were issued in denominations of up to L$1.00. With the predominant use of the US dollar as legal tender, and a buoyant economy, the monetary system of the country thrived without any need for exchange rate management. Large balance of payments surpluses were created, out of which the Government's external US$ reserves were built. With the emergence of economic and financial difficulties after 1980, caused by severe budgetary and balance of payments problems, the monetary system began to disintegrate. Capital flight intensified during the early 1980s, as confidence in the Liberian economy decreased, resulting in a huge outflow of US bank notes from the country. Private, unregulated transfers to other countries, for example, totalled some US$220 million in the first half of the 1980s. The Government's external reserves dwindled from US$20 million in 1983 to US$0.51 million in late 1987. The economy suffered a severe liquidity crisis.

To bring temporary relief to the liquidity crisis, Liberian five-dollar coins were issued in 1982 in small quantities. However, due to the severe pressure on the economy, mainly caused by the huge recurrent budget deficits, the Government resorted in later years to the minting of large quantities of five dollar coins. As a result, these five-dollar coins have largely replaced US banknotes since the mid-1980s.

At present, a hybrid monetary system exists that is neither a pure US dollar standard nor a pure national currency system. Officially, the exchange rate between the US dollar and the Liberian dollar is maintained at a 1:1 basis. However, a parallel market exists, in which US banknotes are traded at a substantial and increasing premium. By early 1988, the parallel market rate was 1:1.5; by the end of the year the rate was 1:2.3. The parallel market rate is openly used for private sector transactions. There are no signs at present that the US$ will be abolished as legal tender, but there is increasing pressure on the Government to adopt a flexible, more realistic official exchange rate. Both the Special Presidential Commission on Foreign Exchange and the IMF have suggested this. The IMF has formulated a detailed proposal which is based on freely negotiable exchange rates in currency dealings among banks and between banks and their customers. Under the IMF's proposed scheme, NBL would then conduct a weekly "fixing session" with the

commercial banks which would be used to establish the offi al exchange rate of the L$ for the next week, on the basis of the "spot rates" agreed upon in currency transactions during the past week, including such transactions between the NBL and the commercial banks. The US$ rate would be the standard from which other exchange rates are derived.

At the heart of Liberia's economic and financial difficulties is the uncontrolled overspending of the Government (see Section 1.1.3). If a currency reform programme is to be undertaken and implemented successfully, the Government must bring its fiscal operations under control. The Government expenditures must be reduced considerably; the recent measures which have increased the level of revenue collected and deposited in the treasury must be continued and, if possible, even strengthened. The external balance must be improved by creating an environment that is conducive to the diversification of the export base and an increase in viable import-substitution production.

To increase the availability of foreign exchange in the public sector, an export earnings surrender scheme was introduced in 1986. Exporters are required to surrender 25 per cent of their hard currency earnings to the NBL, on a 1:1 exchange basis (in the case of US$). The scheme has only been partially successful; less than half the amount due to the NBL in 1987 (calculated on the basis of that year's total export value) was actually received by the Bank. The remainder was, in all probability, traded at the parallel market rate. The available information indicates that the scheme was no more successful in 1988.

In the missions's opinion, there is no workable foreign exchange rating system at present. The IMF advocates a gradual abolition of the present scheme, with the availability of foreign exchange to be eventually regulated by the market to the NBL as described above. The parastatals, however, would be required to surrender to the NBL all foreign exchange earnings, above small working capital reserves. The Presidential Commission has also made the latter recommendation, but it would like to continue the surrender scheme. This would allow the Government more control over inflows of foreign exchange than the IMF proposal. Both the IMF and the Commission urge the establishment of regulations to ensure that scarce foreign exchange will be used for imports of goods that are essential for the regeneration of the economy. Whatever measures are adopted, solutions must be found to the currency and foreign exchange policy issues as quickly as possible.

A "foreign exchange budget" needs to be prepared for the public sector and adhered to without exception. Foreign exchange spending must be kept strictly within the budget framework, with outgoings based on clearly formulated priorities. Within the manufacturing sector, priority allocation should be made to industries which possess the capacity to save or earn foreign exchange, whose needs for imported raw materials are relatively low, and which have linkages to other sectors of the economy.

2.6.3 Pricing policy

For political reasons, the GOL presently controls the prices of selected essential commodities. Their prices, together with the prices of cocoa and coffee, have been fixed at the same levels in L$ for several years. In US$ terms, of course, this means that their prices have fallen. Rice and petroleum products are the major categories of these commodities. In the context of agro-processing, the issue of rice prices is the most important.

Outside observers such as the ECA, the IMF and the World Bank, all agree that the producer price for rice is too low to stimulate production. Production has been stagnant since the early 1980s, and in order to feed the growing population, rice imports (for which scarce foreign exchange must be used) have increased steadily. Rice is now the second most important imported good after petrol. The farm-gate price is US$0.03-0.04 per pound of paddy at the parallel market rate, which compares with US$0.13 per pound in Côte d'Ivoire. Prices in Sierra Leone are also higher. Smuggling is common, therefore further reducing the volume of domestically produced rice marketed in Liberia. This is a disadvantage not only to the direct consumer, but also to the food processing industry, especially cereal milling and feedstocks. Similar problems exist for export crops such as coffee. A revision of agricultural pricing policies is now essential to stimulate production both for direct consumption and for processing, although ways must be found to protect the poorest urban consumers from price increases for basic foodstuffs. Simultaneously, efforts to increase domestic food production by other means, such as improved extension services as outlined in the ERP, should be stepped up.

2.6.4 Credit and interest rate policies

Both the NBL and commercial banks play an important role in providing credit to the Liberian economy. As a consequence of the country's orientation to a free enterprise system, there are no controls governing the allocation of credit. Generally, commercial bank credit has a short-term maturity, most of it being used to finance imports. By mid-1988, total lending by commercial banks to the private sector amounted to L$87.5 million. At the same time, the public sector owed L$64.9 million to commercial banks. By far the most important supplier of credit to the Government and to parastatals, however, is the NBL. The public sector owed L$486 million to the NBL in mid-1988. (NBL lending to the private sector is minimal.) A considerable part of the money borrowed by the Government from the NBL is used to cover budget deficits; in 1988 the amount is estimated to have been L$73 million, more than three times the amount approved by the budget and the OPEX team. While stricter budgetary control by the MOF is essential to reduce the recurrent deficits, it may be necessary for the NBL to find ways to restrain the flow of funds to the GOL, for example by charging higher interest rates. Stronger guarantees for an independent status of the NBL may also be needed. Such measures would help to increase confidence in the GOL's financial poliy, which is one precondition for renewed economic growth.

Since 1980, Liberian banks have been reluctant to provide loans to the productive sectors of the economy. In that year, lending to the private sector fell from L$121 million to L$89 million, after an almost continuous rise during the 1970s. Commercial lending has remained below the 1980 figure since then. As the L$ was devalued, and the US$ prices of many imports rose, the purchasing power of these loans has decreased even more. Loan allocations to the manufacturing sector are only a fraction of total lending; the yearly average for the 1982-1984 period was 0.3 per cent of the total. Under the present circumstances, it seems unlikely that the commercial banks will respond to incentives for increased lending to productive activities from their excess reserves. Restored confidence in the Government's financial and development policies would be needed, but the banks' lack of confidence in private business (the default rate among borrowers is considered very high) is another problem to be tackled.

Specialized banks were created during the latter part of the 1970s to provide credit for special activities. These banks include the Liberian Bank for Development and Investment (LBDI), the ACB, and the NHSB. The latter two institutions have become involved in largely commercial functions, and have also been lending money to manufacturing enterprises, a role which is not in line with the purpose of their establishment. Both banks were in financial difficulties by the mid-1980s, although the ACDB's performance has improved since it has received OPEX assistance. To encourage the flow of credit to Liberian business, a Credit Guarantee Scheme (CGS) was set up at the National Bank of Liberia in 1984, under the sponsorship of the World Bank. International Development Association (IDA) resources were channelled to the NBL for the purpose of providing the loan guarantees. Two thirds of all loans granted to Liberian-owned enterprises by the participating financial institutions (LBDI, ACDB) were to be covered under the Scheme.

Much of the activity of the above-mentioned institutions focuses on small- and medium-sized enterprises (SMEs), defined as having fixed assets up to a maximum of L$100,000. In terms of the number of units and total employment, SMEs are the dominant form of enterprise in Liberia, outside the foreign enclaves in the raw materials sector. SEFO, specifically established to assist the smallest enterprises, is involved in the CGS and is supported by UNDP, UNIDO and bilateral organizations. In spite of external support, SEFO has experienced financial problems since at least 1984. Details are very scarce, but the general impression is that the various credit schemes, including those of SEFO, have not performed well. Up to mid-1987, US$2.2 million had been made available under the IDA scheme, one third of it to small manufacturing establishments.

Disbursement under the IDA scheme has been slowed down because the Liberian counterparts insist on at least 75 per cent equity participation by the prospective Liberian beneficiary (IDA only requires 10 per cent). Other problems include insufficient ability on the part of entrepreneurs to draft proper submissions for loans, and insufficient capacity on the part of the Liberian institutions to evaluate these submissions. Moreover, interest rates tend to be high (up to 20 per cent), and as a consequence many small businessmen tend to default. The assistance of bilateral and multilateral organizations has thus not been able to ensure a successful functioning of the schemes. While further assistance will remain essential, a reassessment of the functioning of these schemes, followed by drastic restructuring, is also necessary.

Credit policy instruments, such as interest rates, credit ceilings and credit allocations are used only to a small extent to influence the direction of credit. Policy regarding interest rate determination in Liberia has been based largely on rates prevailing in New York. This method of interest rate determination has had the effect of producing negative real rates of interest, especially in recent years. This practice has now been modified and interest rates are to be based on the domestic supply and demand for funds. The most widely used credit policy instrument is changing the reserve requirements of banks. However, this instrument has not been used to influence the direction of credit but rather to provide financial resources for financing the Government's budget deficits. The private sector has tended to be crowded out as a result of the Government's demand for funds, arising from its budget deficits. It can be assumed, however, that much credit is made available through informal channels, especially to SMEs, as it is in other developing countries.

3.7 Potential for economic co-operation and development

A report which necessarily deals in depth with the current problems in the Liberian economy should not obscure recognition of Liberia's inherent strengths: a rich natural resource base, a relatively well-developed infrastructure in the coastal areas, a relatively well-educated population, a market oriented economy with an entrepreneurial trading tradition, and a familiarity with international business and trade practices.

There are clearly discernible signs of improvement in a macro-economic picture which in recent years has caused understandable concern among international investors, creditors and development assistance partners. In particular, the Government's strongly worded call for "financial discipline" to eliminate extrabudgetary revenues and expenditures promises to address the main obstacle to eliminating budgetary imbalances and foreign exchange shortages. There will not, however, be a full restoration of confidence until stated intentions are implemented, and reflected in resulting improvements in growth rates, trade and financial flows and Government fiscal operations.

The investment climate continues to improve, as the Government of Liberia is actively promoting opportunities for private investors, and seeking to develop a network of supportive institutions. The Government has pledged renewed adherence to its traditional "open-door" approach to foreign investment, and has taken steps to revise its Investment Incentive Code to respond to new economic realities. It has repeatedly emphasized its encouragement of indigenous Liberian business, and it should be possible to find ways to transfer the enterpreneurial and managerial skills avialable to a wider group of entrepreneurs. At the same time steps should be taken to ensure that these skills, mainly acquired in trade, are modified and expanded to serve the development of manufacturing industry.

CHAPTER 3

THE MANUFACTURING SECTOR AND ITS REHABILITATION

3.1 General overview 1/

During the 1960s and 1970s, the manufacturing sector grew rapidly, stimulated by the Government's import substitution strategy. Manufacturing output tripled in value terms during the 1960-1973 period. The average annual growth rate for the 1970s was 7 per cent. This growth rate was higher than that of any other sector of the Liberian economy. Per capita manufacturing value added (MVA) increased from US$34 in 1970 to US$43 in 1979. However, by 1984 it had declined to US$29. According to UNIDO data, the sector's share in GDP decreased from 10 per cent in 1979 to 7.5 per cent in 1984. According to data from the Ministry of Planning and Economic Affairs, the 1981 share was 6.7 per cent but increased to 7.1 per cent in 1986. Even if the latter figures are more accurate, the sector would still have contracted in absolute terms.

The main cause of the decline was the general collapse of the economy in the aftermath of the coup in 1980.

Apart from the factors that caused the overall decline - low raw material earnings and internal unrest - the incompetent management of some key parastatals in the manufacturing sector should also be included in any listing of causes of the present depressed state of the sector. Several large enterprises were closed down in the early 1980s, and have not resumed operations since.

In the opinion of the mission, the recent liberalization of imports, which exposed Liberian manufacturers to a greater degree of competition (even though imports remain modest because of foreign exchange restrictions), may have caused further decline within the sector. As a result, the per capita MVA may have decreased even further than the low US$29 in 1984.

Table 3.1 shows employment and gross output in large and medium-sized enterprises in 1984 and 1985, the most recent years for which these data were available. The branches for which no data are available do not appear to be significant contributors to total manufacturing output. Although Liberia is a major rubber producer, very little processing takes place in the country. Virtually all rubber is exported as dry rubber after primary processing. The country's sole mineral oil refinery contributed a large share of gross output during the 1970s, but the plant has been closed since 1983.

1/ Data on the manufacturing sector are scarce and not always reliable. Value added data at the sector and branch levels, for example, are not available. This should be kept in mind when reading this chapter and chapters 4 and 6.

Table 3.1: Employment, gross output and wages 1984 and 1985
(output and wages in US$'000)

	Employment		Gross Output	
	1984	1985	1984	1985
3000 TOTAL MANUFACTURING	2,066	2,202	63,976	60,451
3110 Food products	248	307	3,936	6,933
3130 Beverages	681	708	29,262	27,322
3140 Tobacco	68	68	3,937	...
3210 Textiles	...	...	...	...
3220 Wearing apparel, except footwear	...	...	...	...
3230 Leather products	...	...	...	...
3240 Footwear, except rubber or plastic	...	28	...	165
3310 Wood products, except furniture	158	...	954	...
3320 Furniture, except metal	246	296	4,400	2,911
3410 Pap and products	14	14	433	413
3420 Printing and publishing	77	76	945	830
3510 Industrial chemicals	28	14	701	289
3520 Other chemicals	202	262	5,931	4,584
3530 Petroleum refineries	...	...	...	...
3540 Misc. petroleum and coal products	...	...	...	...
3610 Pottery, china, earthenware	...	...	...	...
3620 Glass and glass products	25	27	653	368
3690 Other non-metallic mineral products	207	193	11,131	13,283
3710 Iron and steel	...	...	...	...
3720 Non-ferrous metals	...	...	...	...
3810 Fabricated metal products	53	139	659	2,540
3820 Machinery, except electrical	17	19	211	215
3830 Machinery, electrical	30	39	655	455
3840 Transport equipment	...	...	...	...
3850 Professional & scientific equipment	...	...	...	...
3900 Other manufactured products	...	...	...	...

Source: UNIDO data base.

The beverage branch is by far the most important, accounting for almost one third of total manufacturing employment and some 45 per cent of gross output in 1985. The branch is dominated by a few enterprises that are large-scale and capital-intensive by Liberian standards: a brewery and liquor and soft drinks producers. Two firms account for one half of total employment in the branch.

Until recently, the next important branch was non-metallic mineral products, accounting for approximately 9 per cent of manufacturing employment and 22 per cent of gross output in 1985. The branch is dominated by a single plant, the Liberian Cement Corporation (Cemenco). However, this enterprise had to suspend operations in 1988. Inability to procure sufficient foreign exchange for its major import, clinker, and low earnings as a consequence of unrealistic retail prices set by the Government were the major reasons for the shut down of the plant.

Other important manufacturing branches in 1985 were food products, other chemicals (mainly consumer goods such as paint and soap), wooden furniture and metal products (mainly construction materials). In contrast to the branches that dominate the sector, these branches largely consist of medium and small-scale enterprises (SMEs) using relatively labour-intensive technologies. This type of enterprise is more typical of Liberian manufacturing than the large-scale type. Although estimates of the contribution of SMEs to total manufacturing employment or production are not available, their contribution in manufacturing employment is clearly significant. Government expenditure in the SME sector over the 1987-1991 period is expected to generate 5,430 jobs.

Table 3.2: Industrial output by branch of manufacturing (selected years)
(L$ '000)

	1973	1977	1984	1985
3000 TOTAL MANUFACTURING	...	...	...	...
3110 Food products	5,170	9,300	3,936	6,933
3130 Beverages	5,869	11,980	29,262	27,322
3140 Tobacco	1,090	68	5,937	
3210 Textiles	...	...	...	...
3220 Wearing apparel, except footwear	...	...	...	...
3230 Leather products	...	...	...	...
3240 Footwear, except rubber or plastic	513	715	...	185
3310 Wood products, except furniture	694	3,658	654	...
3320 Furniture, except metal	564	876	4,400	2,911
3410 Paper and products	...	...	433	413
3420 Printing and publishing	...	...	946	830
3510 Industrial chemicals	...	...	701	285
3520 Other chemicals	3,814	13,330	5,931	4,585
3530 Petroleum refineries	20,293	...	...	...
3540 Misc. petroleum and coal products	...	...	...	...
3550 Rubber products	...	...	...	...
3560 Plastic products	168	773	653	365
3610 Pottery, china, earthenware	...	...	...	...
3620 Glass and products	...	...	168	143
3690 Other non-metallic mineral products	2,425	6,087	11,131	13,283
3710 Iron and steel	...	...	...	...
3720 Non-ferrous metals	...	...	...	...
3810 Fabricated metal products	251	502	659	2,540
3820 Machinery, except electrical	...	...	311	215
3830 Machinery, electric	...	...	655	455
3840 Transport equipment	...	...	...	...
3850 Professional & scientific equipment	...	...	...	...
3900 Other manufactured products	...	...	...	...

Source: UNIDO data base.

As Table 3.2 shows, the overall picture of fast growth until the late 1970s, followed by decline in the 1980s, is reflected at the branch level. Until 1984, beverages, tobacco, wooden furniture, non-metallic minerals and metal products were still growing. By 1985, decline was also a fact in the beverages and furniture industries. As mentioned above, the cement plant is now closed.

Available information on the tobacco industry shows a record of strongly fluctuating output. According to a 1986 UNIDO survey (see selected references), the only Liberian tobacco products factory on which data were available appeared to be performing relatively well in the mid-1980s, with output rising continuously. Part of the output fluctuation can be explained by the irregular availability of good quality domestic tobacco, as few attempts have been made to grow the crop on a large scale using modern methods.

The only other relatively successful industry in the group of industries under review appears to be the fabricated metal products industry, and even in this branch a number of individual firms are in serious trouble. This is shown in Table 3.3, which lists the capacity utilization rates of medium and large-scale factories in the Monrovia area. The table lists 44 of these enterprises which - given the size of the sector - may be considered a large sample. It includes enterprises from virtually all branches and offers a good picture of the present overall situation in the sector. The average rate of capacity utilization was 30 per cent and a number of factories were not operational at all.

3.2 Major problems and constraints

While the overall collapse of the economy, accompanied by shrinking domestic markets and a lack of confidence among entrepreneurs, is the major cause for the decline of manufacturing industry, it is possible to identify a number of more specific reasons for poor performance and low capacity utilization. These include:

(i) Shortages of raw material due to the lack of access to foreign exchange (see also viii). In spite of increasing Government efforts to stimulate the use of domestic raw materials such as rubber, round logs, palm oil and sugar cane, these do not yet form a solid basis for developing the manufacturing industry.

(ii) Poor maintenance of equipment and installation, absence of preventive maintenance, and lack of spare parts. Maintenance problems are sometimes aggravated by abuse of the equipment.

(iii) Frequent, unexpected power cuts during the three to four months of the dry season.

(iv) Inadequate budgetary control, production planning and control, product costing, market forecasting and break-even point analyses. In many cases there is no understanding of how to manage a manufacturing enterprise.

Table 3.3: Capacity utilization rates in Liberian manufacturing enterprises 1985

Establishment	Capacity utilization rate
J.B.T. Carpentry Shop, Tubman Blvd., Monrovia	20 per cent
Nimba Wooden Industrial Co., Congo Town	20 per cent
BADDOO Poultry, Somalia Drive	Nil
LEVAN Steel, Somalia Drive	40 per cent
Parker Industries Ltd. (Paints)	33 per cent
Liberia Glue and Latex Foam Industries Inc.	Closed
LP Industries (PVC pipes)	25 per cent
Mesurado Oxygen and Acetylene Plant	Closed
Mesurado Soap Plant	Closed
Mesurado Detergent Plant	Closed
Mesurado Aluminium Fabrication Plant	No activity
Mesurado Garment Industries/Domestic Appliances	Closed
MODALCO - Food Processing	Closed
M.I.C.	20 per cent
Mesurado Fishing Compound and LIFAICO	10 per cent
LIPCO	45 per cent
METALUM	80 per cent
MEZBAU	70 per cent
Liberian Steel Products Corporation	70 per cent
National Food Manufacturing Corporation	80 per cent
Metalloplastica (Liberia) Ltd.	50 per cent
Industrial and Chemical Corporation	25 per cent
LIMACO (Match Manufacturers)	80 per cent
Liberia Battery Manufacturers Corporation	40 per cent
Monrovia Breweries 1 shift (capacity 3 times higher)	70 per cent
ERA Industries Complex Inc.	50 per cent
MANO Mfg. Co. (MANCO) (Bleach, candles, insecticides)	60 per cent
LIPLAFCO - Liberia Plastic Footwear Corporation	45 per cent
Liberia General Industries (cosmetics and soap)	40 per cent
MOTIFCO - Tile Factory	70 per cent
LUNA Nail Factory	No activity
Monrovia Tobacco Corporation	60 per cent
UNIPAC Corrugated Carton Manufacturers	40 per cent
VAANG-AHN Enterprises Ltd. (toilet paper and napkins)	50 per cent
CEMENCO Liberia Cement Corporation	40 per cent
Monrovia Slaughter House	40 per cent
Italian-Liberian Fishing Enterprise	60 per cent
C.F. Wilhelm Jantzen (Furniture) Ltd.	50 per cent
Union Glass Corporation	-
Rainbow Industries	40 per cent
Firestone Rubber Plantation, Latex Plant	...
Firestone Brick Manufacturing Plant	...
A.Z. Corporation Cube Sugar Plant	-
Average	30 per cent

Source: UNIDO, Management diagnosis and industrial rehabilitation in Liberia, 1986.

(v) Limited domestic market options and failure to seize many of those available. Limited export opportunities due to product design and quality, and inability of many firms to guarantee delivery dates. Competition from imported goods has recently become a problem.

(vi) An inadequately developed and functioning banking system, resulting in inefficiencies and lack of liquidity. Overdraft facilities, which most businesses need in order to utilize their capital resources to the fullest, are not available even when warranted. Other services to industry (consultancy, repair shops) are weak as well.

(vii) Inconsistencies in tariff and tax regulations and implementation of the regulations. For example, tax exemptions under the Investment Code are not always granted in the Ministry of Finance.

(viii) Shortages of foreign exchange, especially in non-exporting firms, to buy imported inputs, spare parts and so on, and increasingly difficult access to the foreign exchange that is available.

SME is less dependent on imports of raw materials and spare parts than the large-scale industry sector. However, its management and financing problems are often worse, because entrepreneurs lack know-how and are not considered creditworthy.

3.3 Linkages

The previous section has indicated already that Liberian manufacturing has weak linkages with the domestic resource base. Stronger linkages would not only save foreign exchange; a higher degree of processing of domestic raw materials would also raise the domestic value added of export products, which again would result in higher per unit export earnings.

Forward linkages are especially weak; in fact, the mission could find only two examples. Wood is processed in secondary processing industries such as the furniture and match industries, but this amounts to only about 5 per cent of the export value of round logs. The Government has taken measures to increase this percentage. Palm oil is mainly exported as crude. A small part of the production is used for the manufacture of soap.

Although Liberia's marine resources are considerable, there is no industrial processing of fish at present.

Iron ore, rubber, coffee and cocoa are only subject to primary processing necessary for overseas transport. Apart from these export crops, agriculture is poorly developed, and production is mainly for local consumption. Consequently, few food crops are industrially processed. Raw rice is processed locally by small mills, but, as Section 2.6.3 indicated, the pricing policy for rice inhibits rice growing on a commercial scale.

The metal products industry, mentioned earlier as one of the few growth industries, appears to rely completely on imports. The industry is predominantly a producer of building materials; its products do not appear to be used as inputs by downstream industries.

Table 3.4: Location of small manufacturing enterprises in Liberia
(less than 10 employees)

Type of Industry	Location	Number of Enterprises
Alcohol	Gardnersville	1
Bakeries	Monrovia	9
Bakeries	Kakata	1
Batteries/Accumulators	Gardnersville	1
Batteries/Accumulators	Monrovia	1
Beverages	Monrovia	4
Beverages	Gardnersville	1
Brooms/Brushes	Monrovia	1
Cigarettes	Monrovia	1
Cigarettes	Congo Town	1
Construction Materials	Gardnersville	8
Construction Materials	Lakpazee	1
Construction Materials	Bong Town	1
Construction Materials	Gardnersville	2
Electrical/Mechanical Equipment	Monrovia	2
Fish Processing/Fishing	Monrovia	5
Fish Processing/Fishing	Sinkor	1
Food Processing	Monrovia	1
Furniture/Carpentry	Monrovia	147
Glass	Monrovia	1
Handicrafts	Monrovia	3
Ice Cream/Pastry	Monrovia	4
Ice Cream/Pastry	Urstrura	1
Ice Cream/Pastry	Gardnersville	1
Insecticides	Monrovia	1
Jewelry/Goldsmith	Monrovia	7
Leather Processing	Monrovia	3
Matches	Gardnersville	1
Meat Processing	Gardnersville	1
Metal Processing	Monrovia	9
Metal Processing	Gardnersville	1
Metal Processing	Vai Town	1
Milling, Cereal Processing	Monrovia	4
Milling, Cereal Processing	Buchanan	1
Milling, Cereal Processing	Duo Town	1
Milling, Cereal Processing	Zwedru	1
Milling, Cereal Processing	Tuzon	1
Milling, Cereal Processing	West Point	1
Oxygen/Acetylene	Monrovia	1
Packaging	Bushrod Island	1
Paints	Monrovia	2
Paper Products	Monrovia	2
Paper Products	Freeport	1
Paper Products	Bensonville	1

.....continued

Table 3.4: Location of small manufacturing enterprises in Liberia (in numbers) continued

Type of Industry	Location	Number of Enterprises
Plastic Processing	Monrovia	5
Plastic Processing	Gbarnga	1
Plastic Processing	Gardnersville	2
Potato Chips	Monrovia	1
Printing	Monrovia	12
Soap/Detergents/Cosmetics	Monrovia	7
Soap/Detergents/Cosmetics	Bardnersville	1
Soap/Detergents/Cosmetics	Gardnersville	3
Soap/Detergents/Cosmetics	Congo Town	1
Steel Industry	Monrovia	4
Textiles/Garments	Monrovia	13

Source: Ministry of Commerce and Industry database.

Large enterprises such as the beverages and beer plants are located in the Monrovia area. This includes most of the industries included in Table 3.3. The location is logical, due to the fact that Monrovia is the main port and market of the country, the seat of Government, and - to the extent available - the provider of support services. The Monrovia area is also best equipped with physical infrastructure. Palm oil processing plants and sawmills are located in the plantation and forest areas throughout the country, at points of access to main roads or ports.

An attempt to expand the manufacturing sector by the establishment of an Industrial Free Zone in Monrovia has not been successful and most companies which established themselves in the free port have now closed down (see also Section 3.7). Currently, attempts are being made to expand the steel processing capability in the Monrovia area by establishing a ship-breaking industry in the country. However, the downstream steel processing industry, which could use the scrap steel within Liberia for manufacturing and building purposes, is too weak and the project is unlikely to be successful. Exports of scrap are not likely to be a viable option either.

Table 3.4 shows the location of registered private small-scale companies, with the exception of furniture/carpentry companies. The number of the latter was estimated at 170 in 1981, with the great majority located in the Monrovia area. There might even be more tailors. Many of the registered companies are not operating, according to the Ministry of Commerce and Industry, or are operating at very low capacities. Small-scale industries are somewhat more widespread than large and medium-scale industries, but even they show a high degree of concentration in the Monrovia area.

While for direct rehabilitation purposes the high degree of concentration in and around Monrovia may be convenient, a greater diffusion of industrial activities would be an essential element in an industrial regeneration drive. Processing of raw materials at the source could in many cases be undertaken by relatively unsophisticated small and medium-scale industries which are not too dependent on the relatively well-developed infrastructure of the capital. This would also help to increase rural employment and income.

3.4 Ownership patterns

The economy as a whole is dominated by the private sector, and this is also true to a large extent in the manufacturing sector.

Most manufacturing enterprises are owned by foreigners. No figures are available, but it is estimated that less than 5 per cent of the large-scale companies are fully owned by Liberians. A reservation scheme for small-scale enterprise, which would restrict investment in small-scale industry (SSI) to indigenous Liberians, is being discussed. Otherwise, no restrictions on foreign private investment appear likely in the short-to-medium term.

The Government owns some manufacturing enterprises, including rubber and sugar processing units and a glass factory. All of these have been intermittently dependent on Government transfers during the 1980s. With the exception of the LPRC, the Mesurado Group was the most important conglomerate of Government-owned manufacturing enterprises, producing a wide range of goods (see Table 3.3). Partly as a result of mismanagement, most of the plants had to close down during the 1980s. Finally, the Government is a partner in several joint ventures with foreign enterprises, includes some in the beverage industry.

As part of the ERP, the Government is studying the privatization of most of the companies in which it has controlling interest (see Section 2.1). At national seminars on the development of the private sector held in Monrovia in 1988, however, it was pointed out that mere privatization would not solve the problems of the enterprises. A serious commitment to restructuring and revitalization on the part of the private enterpreneurs would be essential to guarantee their future viability.

3.5 Trade in manufactured products

Manufactured exports accounted for a mere 2.5 per cent of total export earnings in 1983 (see Table 3.5). By 1987, their share had decreased to only 1.8 per cent of the value of total exports. The largest export groups were palm oil, palm kernel oil (until 1985) and sawn, non-coniferous timber. The decrease in international palm oil prices, together with the lack of export promotion and price competitiveness in world markets, were the major factors in the continuous decline of Liberia's manufactured exports.

Although the Government has stated that it wishes to stimulate exports in order to increase the flow of foreign currency into the country, no specific policies have been designed to increase manufactured exports; as before, industries remain basically domestic demand-oriented. Sawn wood and palm oil are likely to remain the main manufactured exports in the medium term.

The decline of foreign exchange reserves and earnings has resulted in a significant reduction of imports. This is also true for manufactured imports, which represented between 76 per cent to 84 per cent of total imports over the 1983-1987 period, if petroleum products are included.

With regard to imports specifically designated for the manufacturing sector, the declining share of capital goods (machinery, industrial and transport equipment) in total imports of manufactures should be noted. This reflects the stagnation of the manufacturing sector since 1980/1981, and also

the scarcity of foreign exchange. As indicated before, the high degree of import dependence of the manufacturing sector and the scarcity of foreign exchange have resulted in decreasing levels of plant capacity utilisation.

Recorded imports and exports of manufactured products were paralleled by non-recorded trade with neighbouring countries. This trade has been very active but is difficult to quantify.

Provided that adequate attention and support is given to problems of operational efficiency and viability of domestic demand-oriented enterprises, increased import substitution in agro-related industries can be achieved and can complement an export expansion strategy. Foreign exchange earnings would thus be complemented by foreign exchange savings. Import substitution could be increased in the food products sub-sector, while secondary wood processing is a likely candidate for export expansion.

Table 3.5: Composition (value and share) of exports and imports, 1983-1987

	1983	1984	1985	1986	1987
Total exports, F.O.B. (million L$)	427.6	452.1	435.6	408.4	382.2
Manufactured goods of which:	2.5	2.1	2.0	1.9	1.8
- palm oil	0.5	0.7			
- palm kernel oil	n.a.	0.8			
- sawn, new coniferous wood	0.3	0.2		0.3	0.7
Crude ores and products of which:	97.5	97.9	98.0	98.1	98.2
- iron ore	62.5	61.7	64.1	60.8	57.0
- crude rubber	17.1	20.2	17.7	19.8	23.4
- wood logs	5.2	5.0	5.3	8.3	9.3
- coffee	4.3	3.0	6.3	4.0	2.6
- diamonds	4.0	2.4	1.1	1.6	2.9
- cocoa	2.7	3.4	2.6	2.2	1.6
Total imports, C.i.f. (million L$)	411.6	363.2	284.4	259.0	307.6
Manufactured goods of which:	81.3	81.6	75.8	83.2	83.7
- capital goods (machinery/ transport/equipment)	13.5	14.7	11.1	11.5	10.0
- intermediate goods (energy products, construction materials)	52.4	51.0	48.4	52.2	57.6
- consumption goods, except food	15.4	15.9	16.3	19.5	16.1

Source: Annual Report 1988, Ministry of Planning and Economic Affairs.

Liberia's trade relations are predominantly with the developed market economies. Few details are available on the destination and sources of manufactured tradeables. However, a good impression of the trade flows can be gained from general trade data.

In 1987, the European Economic Community countries purchased 74 per cent of total recorded Liberian exports, followed by the United States (19 per cent). Neighbouring ECOWAS countries bought only 1.2 per cent of Liberian exports and re-exports in 1987, but absorbed all non-recorded exports. The US, Federal Republic of Germany and ECOWAS countries are the largest suppliers

of manufactures and primary goods, but US shares in the import market have decreased over the years to 19 per cent in 1987. The Federal Republic of Germany supplied about 12 per cent of total Liberian imports between 1983 and 1986, and 17 per cent in 1987. Import trade with ECOWAS countries intensified, from 3.5 per cent of the total recorded imports in 1983 to 15.8 per cent in 1985 and 16.3 per cent in 1987. Nigeria is a major supplier of petroleum products, and Côte d'Ivoire is the major buyer among neighbouring countries.

Due to the relatively low level of processing, Liberian export growth has not generally been constrained by protectionist barriers in importing countries. The impact of regional trade agreements such as the ECOWAS and Mano River Union has been significant as far as imports are concerned. The dependency on overseas export markets has remained extremely high.

Until 1987, there was a ban on imports of a number of manufactured goods to protect domestic producers. These controls have been largely abolished. The most important domestic product still enjoying protection is beer.

3.6 Policies and institutions for the manufacturing sector

The Ministry of Commerce and Industry is charged with the formulation of policies and measures for the development of the manufacturing sector. However, few of the development policies that have been implemented in Liberia are manufacturing-specific, and there is a lack of co-ordination and continuity in policy-making and execution. Other ministries and institutions having an influence on industrial development include:

- The Ministry of Planning and Economic Affairs (preparation and implementation of plans, policies and programmes for industrial development);
- The Ministry of Finance (sources of financing, investment control);
- The Ministry of Rural Development (creation of employment and industrial investment opportunities in the rural areas);
- The National Bank of Liberia (NBL), Small Enterprises Financing Organization (SEFO), Liberia Bank for Development and Investment (LBDI), Agricultural and Co-operative Development Band (ACDB), National Housing and Savings Bank (NHSB), (industrial financing);
- The Monrovia Vocational Training Centre (MVTC) and other training institutions (training of entrepreneurs and workers for industrial development).

The most important general development policies and measures that have been formulated and implemented have been reviewed in the previous chapters. Specific efforts for the development of manufacturing include:

(i) The objectives for the manufacturing sector formulated in the ERP:

- To arrest the decline of the private sector and to broaden the range of goods produced;
- To develop an appropriate mix of import substitution and export-oriented industrial production;

- To promote greater Liberian participation in, and a wider spread of, ownership of the enterprises, as well as to ensure development of experienced entrepreneurs;

- To develop linkages of the small-scale sector with large-scale enterprises; and

- To generate employment opportunities throughout the country with particular emphasis on the rural areas.

The sector's projects and programmes under ERP are: financing small and medium enterprises (SME) projects; development of growth centres; establishment of a technological centre for metal casting; study of potential rural industries based on local resources; study of the supply of machinery for hire-purchase to SMEs. Annex Table 4 gives a breakdown of planned expenditure, indicating that most of the support will be directed towards SME and rural industry. Otherwise, the section on manufacturing in the ERP contained very few details. No evaluation of the implementation of the programmes was available at the time of writing.

(ii) The Liberia Industrial Free Zone Authority (LIFZA)

The LIFZA was created in 1975 to attract export-oriented investment. Viewed as an extra-territorial entity designed to minimize administrative formalities, LIFZA granted zone enterprises the following incentives:

- 100 per cent exemption from corporate income tax for the first five years; subsequent taxation was not to exceed 25 per cent;

- 100 per cent exemption from all import and export duties;

- No limitation on outflows of capital and profits;

- Admission of entirely foreign-owned enterprises and expatriate staff;

- Assistance in company registration, customs clearance and other legal formalities;

- Assistance in obtaining loans and finance;

- Easy access to ECOWAS, Mano River, EC and US markets.

These incentives should have been conducive to investment, but certain divisions of the Ministry of Finance did not want to honour these incentives because income generated by the firms was needed to meet the Ministry's revenue targets. Leasing rates also proved very high, and therefore few firms were attracted to the LIFZA for a long period of time. To make up for the small number of exporting firms, several firms producing for the domestic market were also admitted. Even this did not help to make the LIFZA project successful. Most of the firms presently located in the Zone have ceased operations or operate at very low capacity levels.

CHAPTER 4

AGRO-RELATED INDUSTRIES AND THEIR REHABILITATION

4.1 Justification

Successful industrial development in Liberia could be greatly enhanced by a heavier reliance on the domestic supply of raw materials, now predominantly exported in unprocessed or semi-processed form. The ERP recognizes this, and emphasizes the role of processed agricultural and forest raw materials in future development. The term agro-related used here includes industries using raw materials from agriculture, forestry and fisheries: cereals, cassava, coffee, cocoa, rubber, palm oil, tropical woods and fish.

The ERP'S motivation for emphasizing these industries is not based on the abundant availability, or potentially abundant availability, of these raw materials alone. Agro-related industries, especially food industries, have a low demand threshold; therefore, they can be successful even in the rather small Liberian market. Because most food products are basic needs, demand tends to be relatively stable as well. Looking at export markets, foreign exchange earnings can be increased by a higher degree of processing of fish and agricultural and forest resources. Finally, many of these industries use relatively simple, cheap technologies and are labour-intensive. Financial needs are therefore limited and the employment effects considerable.

Virtually every agro-related industry suffers from problems constraining it from making an optimal contribution to economic development. Hence, for regeneration of the industrialization process in Liberia, the sub-sector must be reviewed and rehabilitation and restructuring measures formulated. In this context, it is vital that a national strategy for the sub-sector be elaborated, stating priorities, targets and a timeframe for implementation. The experience of successful rehabilitation and restructuring in the agro-related industries would also be useful for other industries.

4.2 Branches

The sub-sector has the following branches:

- animal feed processing
- fish processing
- flour milling
- food processing
- rubber processing
- palm oil processing
- wood processing

Crops such as coffee and cocoa are not processed industrially at present.

4.2.1 Overall characteristics

(i) Animal feed processing

This branch is at present very small: there is only one manufacturer producing commercial formula feeds. Small plants were established in the 1970s to cater to the needs of large poultry farms and, to some extent, pig farms.

This branch in particular is important for increasing the production of poultry since domestic output of red meat is relatively small.

(ii) Fish processing

Liberia has a long coastline with rich fish resources. In the 1970s, there was a well-developed integrated fish industry geared to supplying the domestic market and to producing large quantities for export. The scale of these activities is now small. Fish resources are now partly explored by fishing vessels from other countries and the economic benefits accruing to Liberia appear to be small. There is no functioning industrial fish processing plant in Liberia at present which, given the mission's criteria for plant selection, disqualifies the industry from rehabilitation studies. However, the branch has great potential, which should be of great concern to the Government of Liberia.

(iii) Flour milling

Flour milling is of great importance for the supply of essential staple commodities, wheat flour in particular, to urban areas. For climatological reasons, however, no wheat is grown in the country. All wheat used for flour milling is imported and there is only one flour milling enterprise, National Milling, which has its flour mill near Buchanan.

(iv) Food processing

This is a branch which comprises a variety of processing industries, from slaughterhouses to fruit canning, and frozen vegetables to tomato sauce. The branch is also heterogeneous from the point of view of the size of its enterprises, although in Liberia the food processing branch has a narrow base. The branch is discussed in more detail in Section 6.3.

(v) Rubber processing

Natural rubber is by far the most important export crop. Production reached 102,000 tonnes in 1987, 43,000 tonnes of which were produced by the foreign enterprise Firestone; 37,000 tonnes by other foreign concessions; and 22,000 tonnes by Liberian farmers, including absentee landlords living in the cities.

The natural coagulated wet rubber is subject to a primary process which turns it into dry rubber. It is then pressed into bales for export. This process is carried out in nine processing plants, or centres, of varying capacities. The plants are located mainly in the "Rubber Belt" extending from Monrovia in the south going northeast past Gbarnga, and also along the coast at Harper, Greenville, and inland from Buchanan.

Apart from the above-mentioned primary processing plants, there is no rubber industry in Liberia. The country is only a supplier of raw materials for overseas manufacturing companies. Moreover, the Liberian-owned plantations are aging and the future of the entire Liberian rubber branch may be in jeopardy unless more emphasis is soon placed on replanting of rubber trees. The present high international rubber price should be a stimulus for new efforts to increase the contribution of domestic rubber producers to the economy.

(vi) Palm oil processing

A large part of the national palm oil processing capacity is at present under Government control. Although most plants have plantations of their own, many of them also receive palm oil fruit for processing from outgrowers.

Although the bulk of crude palm oil is exported, some is used for domestic soap manufacturing. There is no refinery in Liberia. The palm oil branch is discussed in detail in Section 6.2.

(vii) Wood processing

In 1987, a total of 711,673 m^3 (solid measure) of round logs were harvested in Liberia's natural forests. Exports accounted for 429,000 m^3; this represented an increase of 37 per cent over the 1986 figure. Exports of sawn wood in 1986/87, however, were only 8,410 m^3, or about 2 per cent of round log exports. This illustrates the present situation of the branch fairly well - felling in the natural forests, accompanied by very little processing. There are 24 sawmills and 3 veneer/plywood plants in Liberia. There is no pulp processing. Secondary wood processing is confined to small-to-medium-sized furniture and carpentry enterprises primarily manufacturing for the domestic market. Section 6.1 describes the wood processing branch in more detail.

4.2.2 Major problems and constraints

In the opinion of the mission, agro-related industries are currently performing below optimal capacity. They are going through a period of stagnation and performance is generally poor. This is the result of a number of factors which affect the operation of the plants and discourage investment.

The constraints to the operations of the majority, if not all, of the enterprises are:

- deficiencies in managerial capabilities at various levels;
- lack of finance, including foreign exchange, for the procurement of essential spare parts and inputs;
- frequent mechanical breakdowns of equipment due to inadequate preventive maintenance and lack of spare parts;
- insufficient, or total absence of, incentives to encourage employees to perform well;

- frequently inadequate and often erratic supply of raw material inputs;

- inadequate transport capacity, caused by excessive wear on vehicles due to bad road conditions, inadequate preventive maintenance and lack of spare parts.

In addition to the financial problems facing the enterprises, especially those in the public sector, there is at present a reluctance to invest in agro-related enterprises. This is a serious constraint on the future development of the various branches. It is largely due to the lack of confidence in the present economic environment in Liberia which has been noted in the first chapters of this report.

4.2.3 Linkages

It was noted in Section 3.3 that in the manufacturing sector both backward and forward linkages are weak. In the case of the agro-related industries, linkages are developed to some extent only in the palm oil and wood processing industries. These are more often backward than forward linkages. (See Chapter 6 for a more detailed discussion.)

The main reason for the near absence of linkages is the Government's failure to implement a coherent strategy of resource-based industrialization in the past. The old Investment Incentive Code, which came into force in 1977 and was revised in 1982, had the stated objective of encouraging the establishment of industrial units utilizing Liberian manpower, raw materials, and products of Liberian origin. But no institutional machinery was established within the Government to enforce the implementation or to monitor the impact of the Code. The ERP and the new Investment Code provide a new opportunity to strengthen intersectoral and inter-industry linkages.

Figure 4.1 illustrates the linkages at the branch level and the flow of produce from the agricultural, forestry and fishery sectors to both the domestic consumer sector and the export sector.

4.2.4 Spatial distribution

The distribution of enterprises within the sub-sector is directly related to the location of the natural resource being exploited. Fishing enterprises are centred in Monrovia. Rubber processing plants are located in the Monrovia to Gbarnga "rubber belt" and also in the isolated rubber producing areas in Grand Cape Mount county and Sinoe. Sawmills are located in all of the logging areas, but the secondary wood-based industries are centred in Monrovia, where most of the buyers of its products are found. Palm oil processing plants are located in the main plantation areas of Grand Cape Mount County, Lofa County and Sinoe County. The main milling company using imported grain is located in Buchanan close to the port facilities. Manufacturers providing consumer goods such as ice cream, pastry, potato chips, beverages and bakery products are all based in Monrovia.

4.2.5 Ownership patterns

Agro-related industries show a mixed picture with regard to ownership. The palm oil industry is practically fully Government-owned via the National Palm Corporation (NPC). The sole enterprise in the animal feed branch is privately owned by the National Milling Corporation which, in turn, is controlled by the US-based Seabourne Company. The fish processing branch is almost entirely controlled by private interests, with foreign companies predominating: out of 28 fishing vessels registered with the Ministry of Agriculture only two are Liberian-owned. Private ownership also predominates in other food processing industries. The rubber processing branch is dominated by US firms, with the exception of Sinoe Rubber Corporation and the Rubber Corporation of Liberia which are both publicly owned. Finally, the wood processing branch is predominantly privately-owned as well, with both foreign and domestic enterprises represented. Most of the large enterprises are foreign-owned.

4.2.6 Policies and institutions as they relate to the agro-industrial sub-sector

The general investment incentives discussed in Section 2.3 and the ERP policy objectives for private and public sector manufacturing outlined in Section 3.7 also apply to agro-industries. No separate policies or institutions exist in support of this sub-sector. Some of the general policies that have been implemented, however, have had a special impact on agro-related industries. In Chapter 3, reference has been made to changes in the trade, tariff and pricing policies that have an impact on manufacturing. For the agro-processing industries, the retention of the ban on imports of poultry products is important. Duties are to be lowered on a number of important agricultural products and semi-processed goods (cereals, vegetable oils), which should help to improve the flow of inputs to food processing industries, as domestic agriculture is not yet able to provide such inputs in sufficient quantities. Duties on soft drinks, beer and several other products of the food and beverages sub-sector that are also made locally are to be raised according to the Cabinet Committee on the Review of the Tariffs. (Other sources mention a ban on imported beer.)

Food products are a major category of the commodities whose prices are controlled. In the agro-industrial context, the issue of rice prices is the most important. (See Chapter 2, section 2.6.3 on pricing policy for a detailed discussion.)

CHAPTER 5

THE CHOICE OF PLANTS

5.1 The selection process

The choice of plants for this study was made by the mission after consultation with the Ministry of Commerce and Industry and other Government institutions including the Ministries of Agriculture, Planning and Finance. The following groups and organizations provided input as well: the National Investment Commission (NIC), the Liberian Bank for Development and Investment (LBDI), Liberian business representatives, and the main bilateral co-operation partners - UNDP, USAID and the EEC Delegation.

During the preparatory mission in early November 1988, a list of 14 domestic enterprises was presented by the Ministry of Commerce and Industry, and a list of ten candidate enterprises by the Liberian Chamber of Commerce. Four more firms were added after the full mission arrived in Monrovia in early January 1989. The enterprises suggested by the Government represented both the public and the private sector, with the majority located in Monrovia or its vicinity and a few in other regions.

Detailed information on the enterprises was generally very limited. Before making the final choice, the mission visited a number of firms or met with management representatives.

For the final selection, the following criteria were used:

(a) The plant should have potential for rehabilitation and should not require totally new investment;

(b) The plant should be attractive to outside (European, US, etc.) investors;

(c) The plant must be in a strategic industry as identified in the Government's development policies;

(d) The plant should be largely Liberian-owned. If not, the plant's management and performance must provide demonstrable benefits to Liberian entrepreneurs;

(e) The plant should use, or have the potential to use, domestic raw materials;

(f) The plant should exhibit significant backward linkages to agriculture, forestry or fishery, and forward linkages to other important industries/sectors;

(g) At least one of the four plants chosen should be in the private sector;

(h) The plant should have the potential to save foreign exchange and reduce import dependence.

The companies ultimately chosen were enterprises with problems which in the mission's opinion could be remedied through rehabilitation in a comparatively short period of time and with limited financial resources. The rehabilitation of the selected enterprises should therefore be seen as a pilot project, whereby experience can be gained for the rehabilitation of the Liberian manufacturing industry. This experience can be used in the next stage, for successful rehabilitation of larger, more complex cases.

5.2 Selected plants

After further consultations, the mission identified three enterprises that complied largely with the criteria used and could be subjected to detailed studies. These were:

- West African Agricultural Corporation (WAAC)
- Bomi Hills Wood Processing and Training Corporation (Bomiwood)
- Baker Homegrown Poultry Farms, Inc. (BHPF)

WAAC is a mixed company with a 67 per cent Government interest. It processes palm oil fruit from their own concessions. Bomiwood is 100 per cent Government-owned, engaged in processing of round logs from two forest concessions. BHPF is a privately-owned integrated enterprise which breeds, hatches, and rears broilers for supply to the slaughterhouse. It also processes the necessary formula feeds.

5.3 Justification and linkages

West African Agricultural Corporation (WAAC)

Oil palms are grown widely in Liberia and the palm oil fruit is traditionally used for extracting of oil on a household basis. Large quantities of palm oil fruit are available for industrial processing, which at present is carried out in six plants with capacities ranging from 100 kg of fruit per hour to 10 tonnes per hour. The performance of all palm oil processing plants is sub-standard according to available reports.

WAAC was selected as a typical representative of the larger palm oil processing plants in Liberia, which are characterized by poor capacity utilization, lack of working capital and inadequate management.

WAAC has potential for rehabilitation, and the palm oil branch is believed to be of interest to foreign sources of finance. The present mixed ownership structure of WAAC is likely to be beneficial in this respect.

Palm oil is important to the Liberian economy, not only because of its domestic use for human consumption, but also as an input for domestic soap manufacturing enterprises - one of the rare examples of forward linkages in Liberian manufacturing. At present, much crude palm oil is exported; however, it could be used domestically on a much wider scale as an input for other processing industries.

Bomiwood

Liberia has large forestry resources. At present, practically all timber exports are in the form of round logs. A recent Government directive orders the industry to increase its production of processed timber from the present level of about 2 per cent of the logs to 20 per cent by 1 March 1993. The current saw milling capacity is too small for this task and must be increased.

Bomiwood could serve as a model for other sawmills with regard to management, administration, operation and marketing. Bomiwood has operated over a number of years with assistance from the Federal Republic of Germany. The co-operation agreement terminates in 1990 and its renewal is reportedly uncertain.

One important component of the Bomiwood project, the training of personnel for forestry and sawmill employment, has not been successful.

Bomiwood has backward linkages to forestry and forward linkages to secondary wood-processing enterprises, but for the saw milling industry as a whole these are rather weak and should be strengthened.

Production at Bomiwood is to a large extent focused on export of sawn timber, but marketing is one of the areas where rehabilitation and further development are needed.

Baker Homegrown Poultry Farms, Inc. (BHPF)

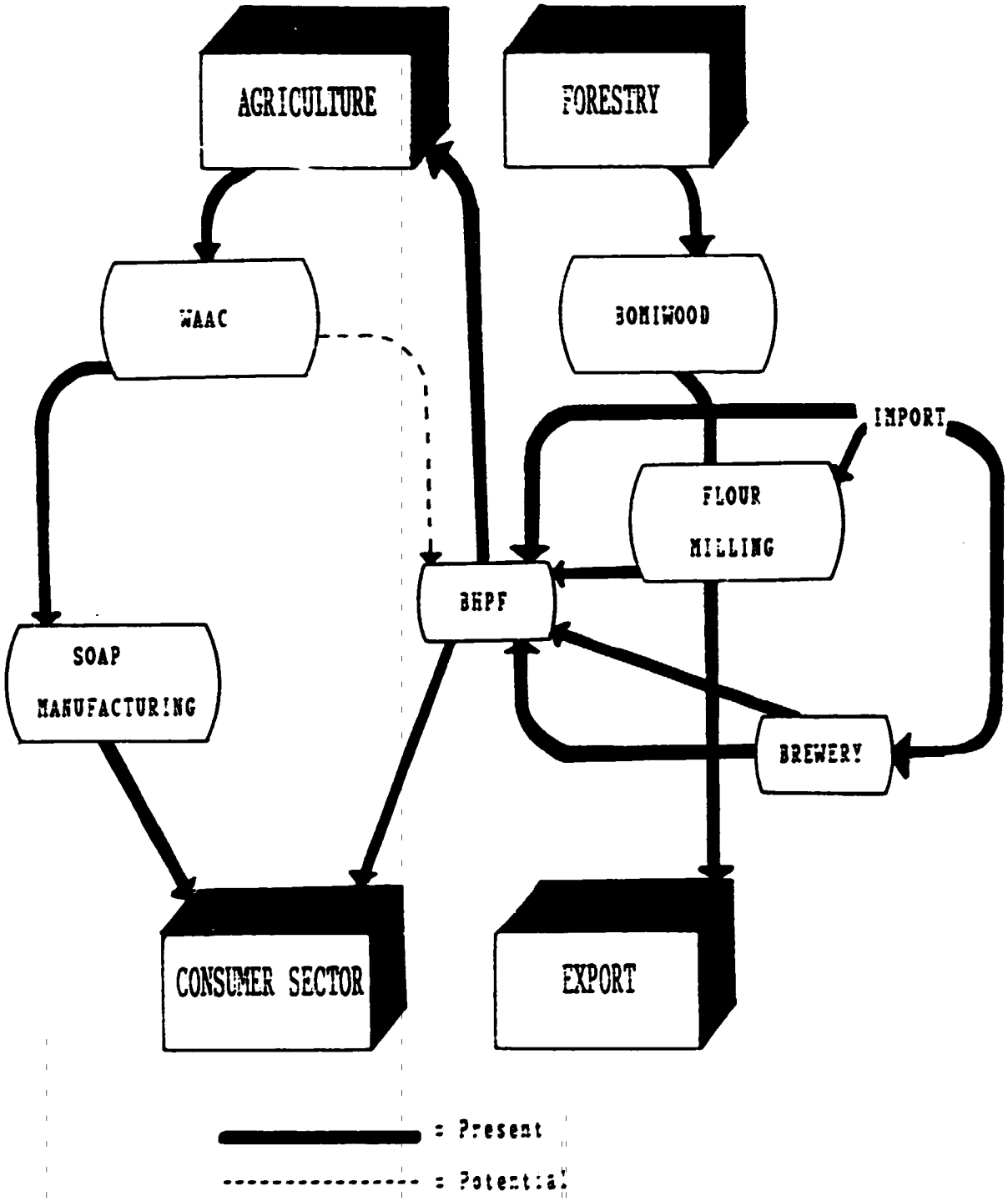
Before 1980, the poultry industry in Liberia was successful in providing the domestic market with poultry products. During the 1980s, however, virtually all poultry enterprises suffered from a variety of problems. No large-scale commercial broiler enterprise is in operation at present, and very large quantities of frozen chickens are imported. Moreover, there are no commercial hatcheries operating at present, and no chicken slaughter facilities using modern slaughtering methods.

BHPF is a private enterprise with two-thirds Liberian ownership. The rehabilitation of BHPF would significantly reduce the need for chicken imports. BHPF would also be able to supply small-to-medium sized broiler units with day-old chicks and feed, and provide extension services to these farms. Its operations enhance two branches: animal feed production and meat processing. BHPF is an integrated enterprise, comprising all phases of operations from feed production and stock to the slaughtering and packing of birds ready for the market. The units need rehabilitation in varying degrees, with some of the units being in comparatively good shape. The structure of the enterprise is expected to be attractive to foreign investors.

Linkages

Figure 5.1 illustrates the linkages of the selected enterprises. Linkages are few, and only BHPF has more than one forward and backward linkage. This is another reflection of the neglect of domestic resources and the high import dependence of manufacturing. But there is a potential for stronger linkages, and this potential can be realized, provided not only that rehabilitation of the selected plants is successful, but also that the issue of increased reliance on domestic inputs is pursued vigorously within the context of the ERP's industrial regeneration attempts. These potential linkages will be outlined in Chapter 6.

Figure 5.1: Linkages - selected enterprises



CHAPTER 6

BRANCH PROFILES

The analysis of Liberian agro-related industries and the preliminary assessment of several companies resulted in the choice of three companies for rehabilitation in the following three branches: wood processing, palm oil processing and poultry/feed processing. This chapter provides background information on these branches.

6.1 Wood processing

6.1.1 Overall characteristics

Wood processing is the second most important branch in the manufacturing sector, after textiles/wearing apparel, in terms of the number of enterprises and size of the labour force. In 1986/1987, about 220 woodworking enterprises were estimated to exist. Together, they employed about 2,150 persons, equivalent to 19 per cent of the total manufacturing labour force. There are many small-scale wood processors in the informal sector, although no estimate of their number is available. In this connection, it is worth noting that there are 51 registered logging companies, employing some 3,800 people.

Table 6.1: Wood processing: estimated number of registered enterprises and employment, 1986/1987

	Number of companies	Total Labour
PRIMARY PROCESSING		
- Sawmilling	24 a/	1,300
SECONDARY PROCESSING		
- Plywood, veneer)	3	150
- carpentry, wood workshops)		
- Furniture)	over 170	700
TOTAL	about 200	about 2,150

Source: Compilation of Ministry of Planning and Economic Affairs

a/ Only 17 operational.

Primary wood processing consists of sawmilling. Most of the sawmills concentrate on logs for export, as well as small quantities of high quality sawn wood of well-known hardwood species.

Only one company has over 1,000 employees; six others employ over 100. The other ten operational sawmills are small, labour-intensive operations. The equipment employed is generally out-dated, and the operations are inefficient. Slabs and off-cuts are utilized as fuel wood, and large quantities of wood residues and waste are left to rot. Productivity is low and the installed machinery is generally under-utilized, mainly because roads and logging trucks are often in a state of disrepair. Sawmills, therefore, cannot be properly supplied.

Secondary wood-processing industries utilize the primary products for further manufacturing and assembly into standardized products (scaffoldings, partial frames, beams, form work and so on), non-standard products (building components such as doors, windows, mouldings), furniture, packaging (crates, boxes, pallets), and others (hatches, boats).

With the exception of three large foreign-owned companies, the secondary wood-processing sector consists of small enterprises, mainly producing non-standardized products and catering only to the needs of the local market. The industry is highly labour-intensive, offering non-serial production of generally low-quality finishing and design.

Woodworking machinery used in secondary processing is generally obsolete and poorly maintained.

The domestic value-added content of wood-based products supplied to the domestic market remains low, and secondary processed goods are generally unable to withstand the competition from higher quality, lower priced imported products.

A new regulation No. 15 on exports of logs and processed wood came into effect in March 1988. It imposed an obligation on logging companies to process 10 per cent of extracted logs locally. An additional sawmilling capacity of 25 to 50 per cent could become operational in the near future if this regulation is implemented. Moreover, the domestic value added content of wood products will be increased.

Liberian-owned manufacturers and distributors in the branch were encouraged by the Government to form a professional association, the Liberian Wood and Carpentry Industry Association (LWCIA). The LWCIA receives government and foreign support, and its main goal is the development of secondary wood processing. Some of the envisaged activities of the Association are the development of a centralised clearing-house system for contracts, control of sawn timber retailing on the domestic market, and centralisation of imports of equipment and supplies. At the time of writing, the extent to which these activities actually take place was not known.

Measures to stimulate the development of secondary wood-processing include an increase in the utilization of standard products, the establishment of quality standards, and measures to increase domestic demand. If successful, these measures are expected to increase the number of market outlets and the level of utilisation of sawmilling enterprises over the medium term. They will also have the effect of reducing dependence on imports and conserving foreign exchange.

6.1.2 Major problems and constraints

As a whole, the wood processing industry is faced with the following major constraints:

- Inadequate supplies of wood inputs at competitive prices due to inefficient extraction and transport of logs;

- Non-standardisation and low quality of secondary processed wood products. Breaking even is difficult because of high production costs and low prices that domestic wood products command in the market;

- Very low productivity in the sawmills;

- Lack of promotion on the local market of lesser-known, but relatively cheap wood species;

- Lack of experienced and adequately trained management, as well as skilled personnel;

- General lack of recognition of the need for short and long-term planning in managing enterprises, and lack of understanding of the fundamentals of price/cost calculations and record-keeping procedures;

- General lack of adequate working capital;

- Poor maintenance and lack of equipment and spare parts (the latter is often a result of foreign exchange shortages);

- General lack of knowledge of the market and general lack of marketing support;

- Absence of institutional credit facilities, especially for Liberian businessmen and Liberian-owned companies. When loans are granted there is normally a long period between submission of the application and disbursement.

6.1.3 Linkages

Forward linkages are not very well developed at present, with a limited amount of further processing performed. Doors, panels, crates and pallets are examples of downstream manufacturing.

As seen in Figure 6.1, sawn timber is also sold to carpenters working for the domestic market. This figure also shows examples of potential forward linkages, including export-oriented knock-down furniture industries, and the manufacturing of floor boards and parquet floors for direct installation. Other forward linkages could possibly be identified, depending on developments in the domestic and export markets.

In summary, the potential for forward linkages is considerable. Market surveys would have to be made to identify products which can be produced in Liberia at competitive prices and of uniformly high export quality.

6.1.4 Spatial distribution

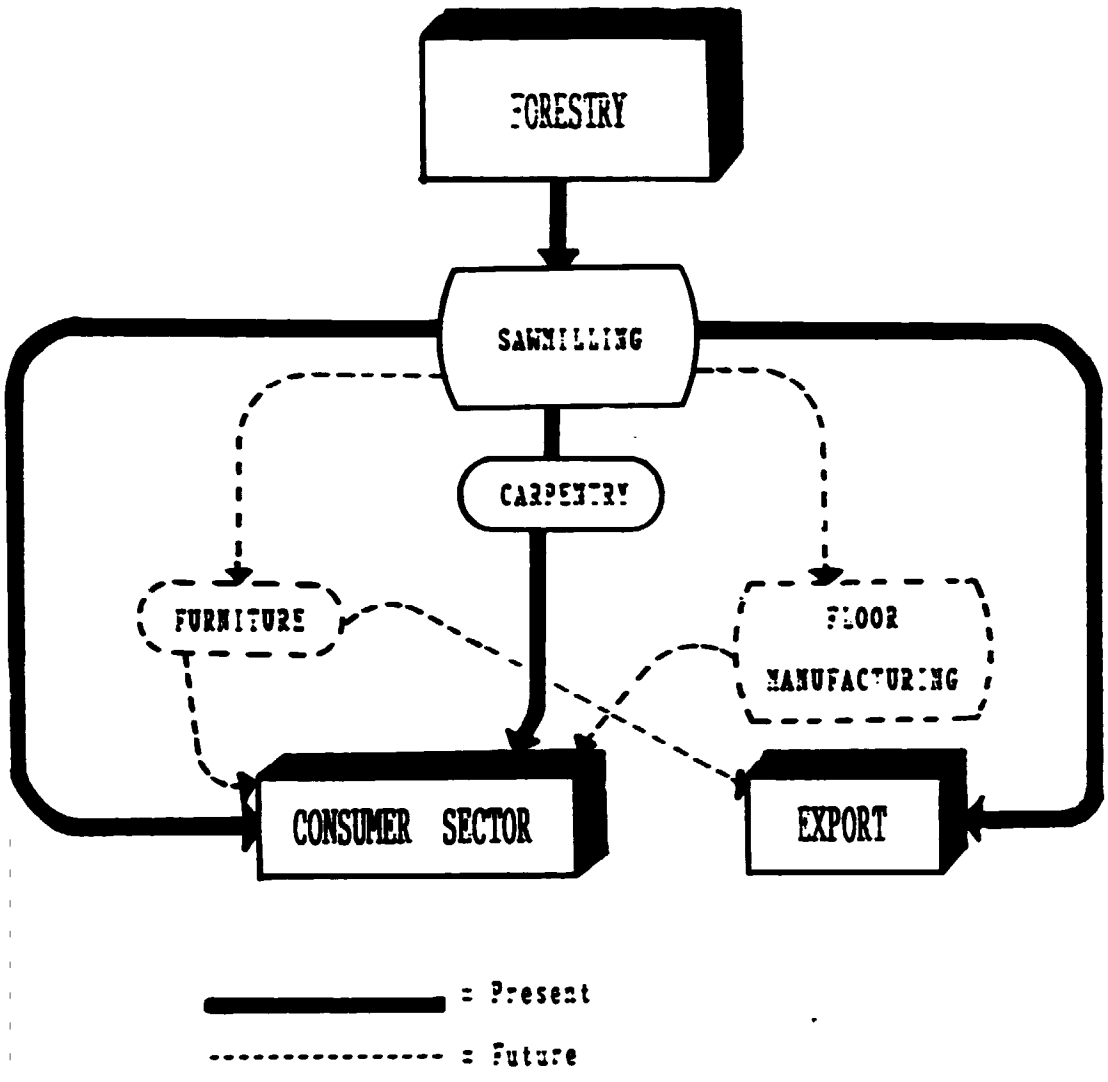
The forest resources of Liberia occupy about 49 per cent of the total land area of the country, the majority of the forests being in the south-eastern and north-western areas of the country.

Geographical Distribution of Forest Areas

	Million hectares	Million acres
South-eastern sector	2.727	6.736
North-western sector	1.205	2.977
Northern sector	0.059	0.147
Others	0.799	1.976
	4.790	11.836

Source: Forestry Development Authority, Annual Report 1986/87.

Figure 6.1: Linkages - present and potential wood processing branch



The majority of logging and wood-processing operations are dispersed throughout the south-eastern and north-western forested regions. They are located at the points of access to main roads or ports, as the industry is largely dependent on export markets. Within the branch, the number and economic importance of logging companies is larger than that of the primary processing companies, with the majority of activities focused on the export of raw logs. Recent Government regulations oblige logging companies to process locally a minimum of 10 per cent of their total output. If implemented, this regulation would lead to a better distribution of wood processing facilities within the country.

During 1986/87 there were 17 operational sawmills producing sawn timber, veneer and plywood. They are located in the following regions:

Forest region	County of forestry HQ	Number of sawmills	Number of plywood/ veneer plants
1	Nimba	7	-
2	Grand Gedeh	8	2
3	Lofa	7	-
4	Sinoe	2	1
	Totals	24	3

Source: Forestry Development Authority, Annual Report 1986/87

Seven of these sawmills were not operational in 1987. Apart from the Bomiwood mill, they produced mainly for the local market.

The branch also contains secondary woodworking units, all owned by Liberians; 167 were registered with the LCWIA in the Greater Monrovia area in 1987. Such enterprises are also found in all other major towns, although their precise numbers are not known.

6.1.5 Ownership pattern

The enterprises in the branch are almost all owned by private companies; most of the larger enterprises are foreign-owned.

The only wholly Government-owned company within this branch is Bomiwood, which is controlled by the Forestry Development Authority (FDA) and the National Investment Commission (NIC), the former owning 60 per cent and the latter 40 percent.

In the case of Bomiwood there is a bilateral agreement between the GOL and the Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ), under which GTZ provided loans and grants. The original objective of Bomiwood was to provide training and management expertise for the wood processing branch. The privatization of the company is being discussed.

6.1.6 Policies and institutions as they relate to the wood processing branch

There are no separate policies and institutions. It should only be pointed out that prices are market-determined. Readers are referred to the policies and institutions described in Section 4.2.6. It is useful, however, to give a brief survey of forestry policies in the present context.

Government policy concerning the management and utilization of the forest resources is stated in the 1976 Forest Development Authority Act.

Measures concerning the conservation of forest resources, as well as the forest management practices of the Forestry Development Authority, are based on the following policy objectives:

- Make the most productive use of public forests, taking both direct and indirect values of wood reserves into consideration;
- Co-ordinate forestry and other forms of agricultural land uses, and develop the forestry sector and industries in harmony with overall national development;
- Preserve and protect forest resources by avoiding waste and destructive extraction of valuable species, as well as by the application of conservation programmes involving the rural population;
- Undertake afforestation and reforestation programmes and establish scientifically managed permanent forest estates in the National Forest Areas;
- Promote the commercialization and use of lesser-known wood species.

The Forestry Development Authority, under the auspices of the Ministry of Agriculture, is the institution in charge of forestry development.

6.2 Palm oil processing

6.2.1 Overall characteristics

Palm cultivation and palm oil processing is a mirror image of Liberian agriculture in general: it is an activity which is sharply divided between modern plantations and mills on the one hand, and a traditional subsistence sector which is essentially non-monetized on the other.

No area estimates of wild oil palm groves are available, but according to a World Bank survey (see Selected References) nearly 45 per cent of the agricultural households make palm oil traditionally, from wild grove fruits.

Most of the domestic demand for palm oil, roughly estimated at 23,000 to 25,000 tonnes per year, is covered by local production. Liberia has no refinery for crude palm oil. Between 1983 and 1987, imports of refined oil needed to meet local consumption needs averaged $3.85 million per year.

In the late 1960s and 1970s, the Government started encouraging the modern cultivation of oil palms, and even got directly involved. The objective was to satisfy local demand and also to produce for export markets. This objective has only partially been reached, and most of the demand is satisfied by private enterprise.

According to the estimates of the Ministry of Planning and Economic Affairs, the current area planted with oil palms amounts to some 19,500 hectares, and the existing milling capacities amount to 42 tonnes/h of fresh fruit bunches (FFB), distributed as follows:

Ownership or concession	Area planted (ha) Estate	Smallholders	Milling capacity (t/h FFB)
Public sector or public sector majority	8,950 (in all locations)	5,600	31.0 (in 6 locations)
Private sector	5,050 (in 5 locations)	-	11.0 (in 3 locations)
Total	14,000	5,600	42

Source: Ministry of Planning and Economic Affairs, Annual Report, 1986

The Government operates oil mills on smallholder farms (73.7 per cent of the existing planted area) and on concessions, and owns, or is the major shareholder in, 73.8 per cent of the total milling capacity in the country.

The condition of the state-managed palm sector is alarming. Most plantations are old - that is, close to the end of their productive life of 15-16 years - and improperly maintained (no use of fertilizers, little or no replanting, irregular and inadequate upkeep). Four of the small mills (with capacities of 1.5, 2 or 6 tonnes/h FFB) are old and their processing capacities were insufficient from the start, so that only part of the output of the surrounding plantations could be processed. They are either operating at very low levels or had closed down by 1985.

The two larger Government-owned mills, with capacities of 10 t/h FFB, are operating intermittently, far below their rated capacity, and at a loss. A 75/t/day palm kernel crushing mill that exported up to 6,000 t/y of palm kernel oil until 1978 was closed down in 1980. The yields on smallholders' farms are low in comparison with wild oil palm groves, primarily due to poor initial site selection and poor management, although the planting material (of the Fenera variety) gives generally satisfactory results.

6.2.2 Major problems and constraints

The major constraint facing this branch is the lack of defined, coherent development policies and objectives.

The majority of the plantations are badly mismanaged, and tree reserves have been partially destroyed through inadequate upkeep and harvesting techniques.

The insufficient capacity of several processing mills resulted in uncollected crops that were left to rot on the trees.

Due to the lack of competent management and shortages of working capital, all plants operate intermittently, at very low output levels. This results in relatively high production costs and accumulating operational losses.

Shortages of foreign exchange and a lack of planning in purchasing imported spare parts regularly cause breakdowns or closure of plants.

The productivity and profitability in the majority of enterprises are reduced further by the low level of labour skills and, more importantly, the lack of motivation and interest among workers due to low salaries or even non-payment of wages.

6.2.3 Linkages

In addition to the backward linkage to agriculture, there are at present only two forward linkages - one to soap manufacturing and the other to animal feed processing. Some crude palm oil is sold directly to domestic consumers while the remainder is exported. Figure 6.2 shows both existing and potential linkages. To increase linkages, MVA and employment, the rehabilitation of the existing palm kernel processing plant would be of some interest. This would also permit the palm oil extraction plants to find a market for the palm kernels. At present these do not generate any revenue, as they are either used as fuel or simply thrown away.

A palm oil refinery has been under consideration by the Government on the basis of a 1978 UNIDO feasibility study. In the opinion of the mission, demand on the domestic market and the Mano River Union would probably justify this project. The availability of refined oil, moreover, would enable the exploitation of more forward linkages.

6.2.4 Spatial distribution

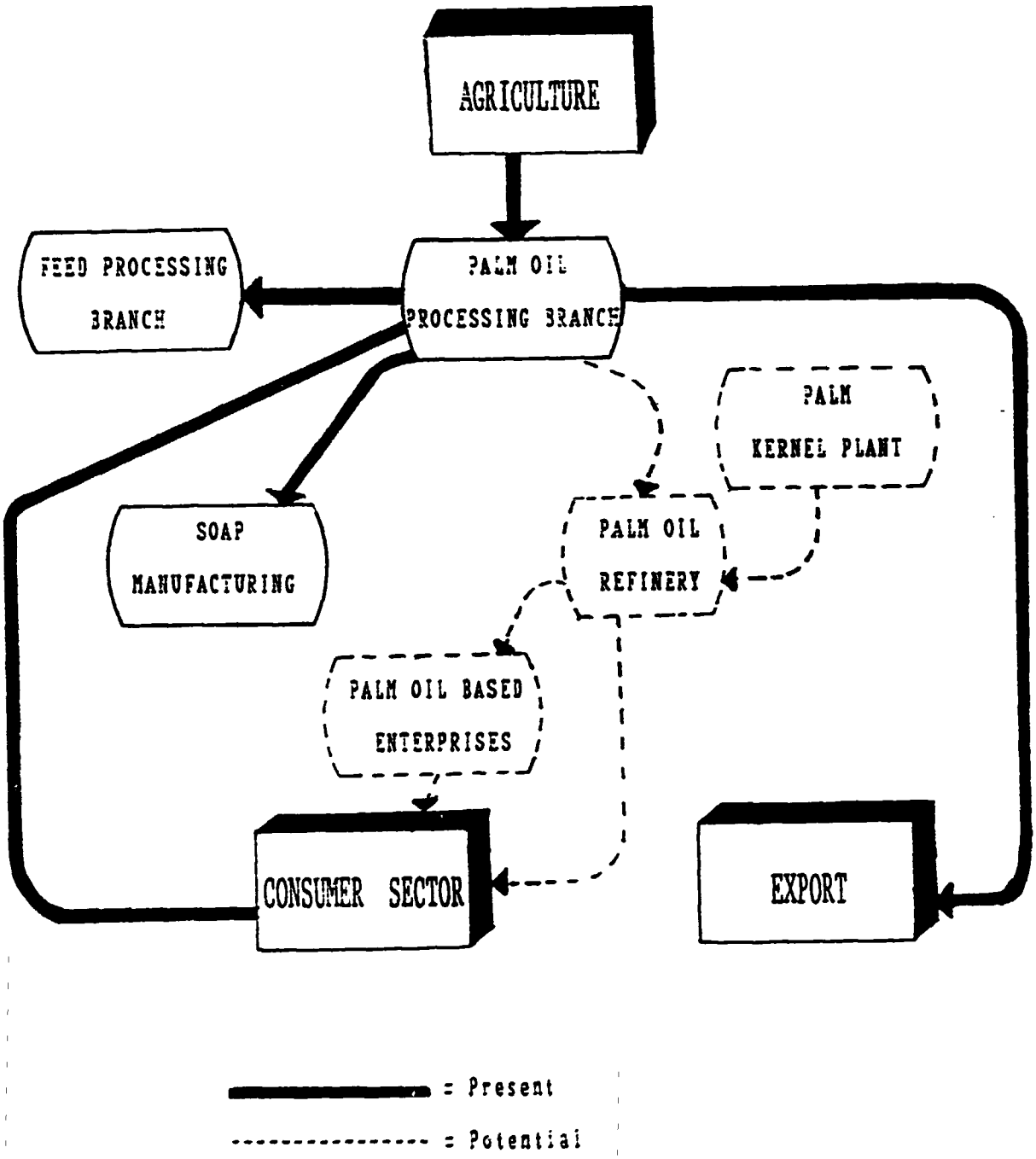
The palm oil processing branch presently consists of a few modern crushing mills distributed around the country, plus many small village units where oil seed is crushed by hand for local consumption. The kernel crushing mill is located in the Monrovia Free Zone. As indicated above, all of the larger units installed in the country are now either closed down or are operating at very low capacities. The location of these is as follows:

Company	Plantation size (acres)	Installed capacity (t/hour)	Country location
WAAC	4,000	10	Grand Cape Mount
Butaw	5,800	10	Sinoe
Decoris	14,000	4	Marland
Foya	2,500	6	Foya
Dube	1,100	1	Grand Gedeh
Zlea Town	1,000	0 (village processing)	Grand Gedeh
Kpatawee	1,000	0 (village processing)	Bong
Totota	900	1.5	Bong
Madco	700	1	Fendell
Libinc	6,500	10	Grand Bassa

Source: SOFINCO - Study on palm oil processing sector, 1985

Libinc, a private company located at Buchanan, supplies industrial oil to Rainbow Industries for soap manufacture and appears to be the most successful operation.

Figure 6.2: Linkages - present and potential palm oil processing



6.2.5 Ownership pattern

According to a LBDI study, the total production of palm oil in Liberia is estimated to be about 20,000 tonnes annually, of which 15,000 is produced in the subsistence sector. The remaining 5,000 tonnes is produced by the industrial palm oil sector, of which LIBINC, a private company, produces about 3,900 tonnes or 77 per cent. The rest of the industrial palm oil sector is partly or wholly-owned by the GOL through National Palm Corporation (NPC).

Ownership in many of the private companies in the palm oil processing branch has witnessed rapid changes. There have been minority interests from abroad, mainly from Belgium, but all foreign investors have pulled out after a short time.

6.2.6 Policies and institutions as they relate to the palm oil branch

There are no separate policies and institutions for the branch. The policies and institutions referred to in Section 4.2.6 are also applicable here. The only point that should be made is that prices in this branch are administratively controlled.

6.3 Poultry processing

6.3.1 Overall characteristics

The meat processing branch incorporates slaughtering and processing of poultry, cattle and pigs. The current very low level of development of this branch is partly a consequence of the specific structure of Liberian livestock and meat supplies.

Poultry meat is of particular interest to Liberia as a source of animal protein in addition to fish. Chicken production was developing quite well during the 1970s, but industrial rearing and slaughtering of broilers ceased during the first part of the 1980s. Resumption of these activities is of national interest; therefore, the following discussion focuses on poultry processing.

Traditional meat supplies

The majority of the Liberian population depends upon subsistence agriculture for its meat supply. It therefore relies essentially on non-monetized livestock and meat production. The development of intensive animal production and meat processing in urbanized areas has been slow, partly because of the development of fisheries and artisanal fish processing, which provided the principal source of animal protein in urban areas.

The size of the traditional livestock herd is very small. It was estimated at a total of 260,000 head in 1987/1988 (Ministry of Agriculture estimates), of which half are goats, 23 per cent sheep, 21 per cent pigs and 6 per cent cattle.

An estimated 800,000 poultry (95 per cent chickens and 5 per cent ducks) were found on traditional farms according to MOA estimates. Assuming off take rates of 10 per cent for cattle, 75 per cent for pigs and goats/sheep, and 100 per cent for poultry, and using the prevailing average carcass weights, the current equivalent meat supply amounts to 4,150 tonnes only. For a population

estimated at 2.29 million in 1987/88, this implies an annual consumption of about 1.8 kg meat per capita from indigenous traditional livestock. Nearly all the meat off take of the traditional farms is consumed directly in the villages.

Commercial poultry/piggeries and meat processing

In the peak years 1979 and 1980, commercial, intensive poultry and pig farming and slaughtering supplied an additional 2,200 tonnes of meat per year. However, most of the large integrated poultry/slaughtering units that existed in the early 1980s have closed down for reasons outlined in Section 6.3.2. Commercial operations are now reduced to only two relatively large units and to some 30 small farms which sell the greater part of their poultry production live. In the remaining large poultry unit, which operates at a very low level, laying is more important than slaughtering.

Commercial poultry and slaughtering operations still supply a large part of the meat marketed in towns, either fresh or frozen. However, the entire demand for meat and meat products cannot be met by these local suppliers. Between 1982 and 1985 annual imports of meat, paid for with scarce foreign exchange, averaged 215 tonnes of meat and edible offal, 3,650 tonnes of preserved meat, and 6 tonnes of chickens. In 1986/87 imports rose to 10,000 tonnes of pork ribs, 5,400 tonnes of frozen poultry, 12,500 tonnes of frozen beef, and about 8,000 tonnes of processed meat products, according to data supplied by the University of Agriculture.

The GOL conducted a national poultry survey in 1987 in order to develop a strategy for the development of commercial meat processing, with particular emphasis on the production of chickens and eggs and the curtailment of imports. The results and recommendations of the survey are still under consideration.

It is the mission's view that poultry processing is the most promising industry in the meat processing branch. Therefore, the following sections are limited to issues relevant to the poultry processing industry.

6.3.2 Major problems and constraints

Several commercial integrated poultry/slaughtering and processing operations closed down after 1982/83, as a direct result of mismanagement, insufficient working capital reserves, an irregular feed supply, and difficulty in obtaining access to commercial credit.

The enterprises which are still operating encounter major difficulties in importing their basic raw materials - feeds, day-old chickens, packaging materials, and spare-parts - due to the scarcity of foreign exchange.

Prior to 1981, the domestic meat processing business was protected by a ban on the import of chickens. The liberalisation of imports and competition from very low-priced chickens from Europe forced several poultry operations out of business and continues to be a major problem for the few remaining ones.

Efforts are being made by private producers to reduce their imports of inputs by initiating local contract-farming of feed, or by starting-up new hatcheries. These developments are delayed by the difficult access to credit at acceptable terms.

6.3.3. Linkages

Figure 6.3 shows the backward and forward linkages in the Liberian poultry slaughtering industry. It is important to remember that there is only one industrial poultry slaughtering enterprise which is currently not operational. The backward linkages are likely to be primarily with the commercial poultry units, with few direct links to domestic agriculture. In the long term, the market for live birds is likely to be replaced by one for dressed birds. It is then expected that, with regard to slaughtering, the small to medium-sized poultry operations on integrated farms will become important sources of broilers and spent hens from egg production.

6.3.4 Spatial distribution

At present, the branch consists mainly of numerous subsistence farmers scattered throughout the country. There is virtually no surplus for the urban population.

In the Monrovia area, the Baker hatchery with a capacity of 24,000 day-old chicks per week, closed down in 1980. The company's broiler farm in Monrovia, with a capacity of 500,000 broilers per year, ceased operation in 1984.

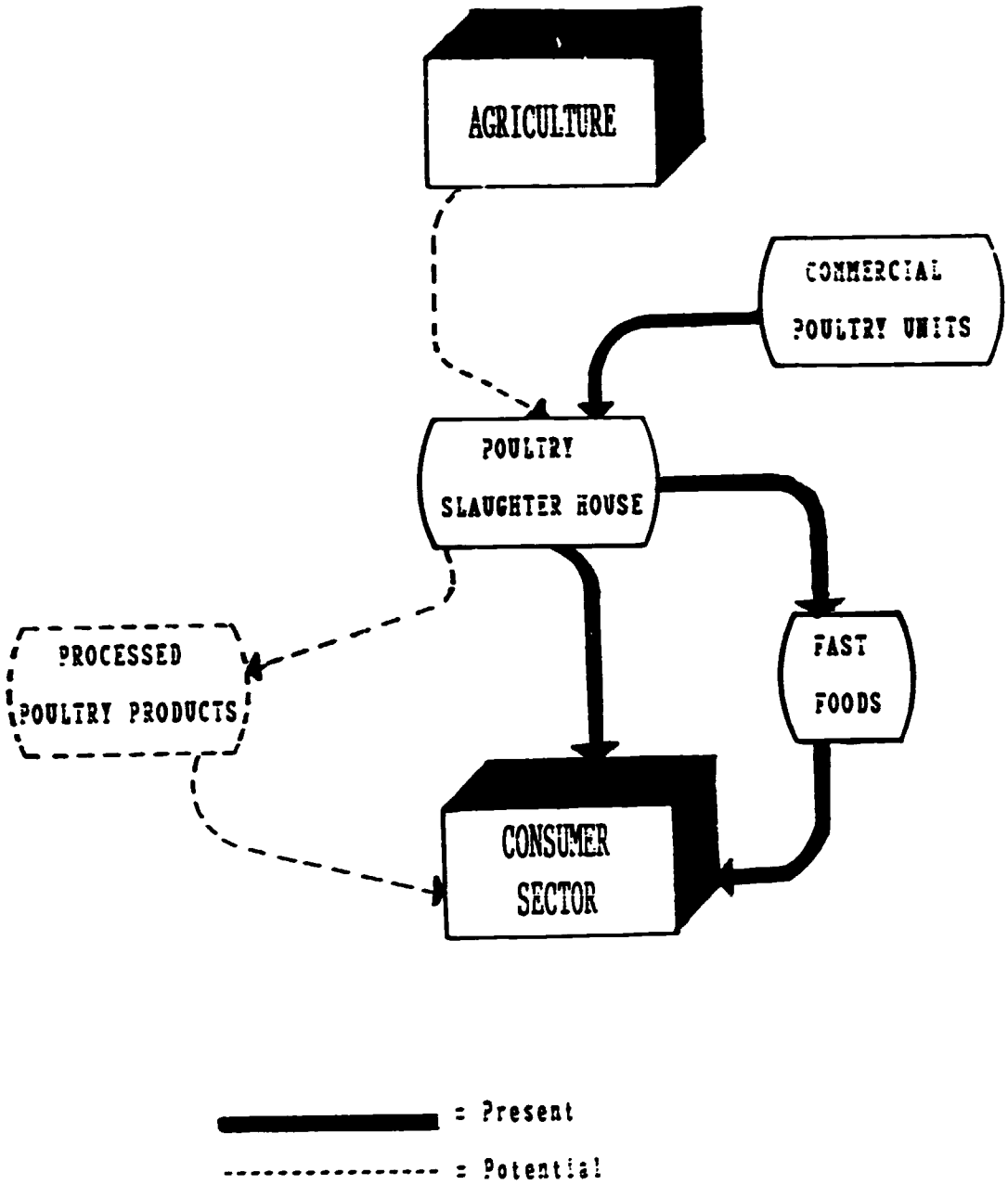
In the Gbarnga area, the Baker unit as well as the Sangai laying and broiler farm and broiler processing plant, with a capacity of 1,000 birds per hour, closed down in 1980. At Sangai, there is a hatchery unit but this unit was never commissioned.

The only remaining commercial producer is the Bright layer farm at Kakata, which produces approximately 26,000 eggs per day. A broiler production unit is presently being planned for the same site. The distribution, by county, of traditional subsistence poultry raising is as follows:

County or Territory	Number of households with chickens	Number of households with ducks
Bomi	2,300	250
Bong	11,800	1,060
Grand Bassa	8,100	520
Grand Cape Mount	2,100	330
Grand Gedeh	9,400	960
Grand Kru	3,300	120
Lofa	12,200	1,080
Margibi	4,800	550
Maryland	5,200	210
Montserrado	3,900	340
Nimba	18,200	2,850
Rivercess	1,800	170
Sinoe	5,200	350
TOTAL	88,300	8,790

Source: Ministry of Agriculture, June 1988 Report.

Figure 6.3: Linkages - present and potential poultry processing



5.3.3 Ownership patterns

The only poultry processing plant in the country is privately owned.

5.3.5 Policies and institutions as they relate to poultry meat processing

The policies and institutions referred to in 4.2.6 are also applicable to the poultry processing branch. The prices in this branch are market determined.

6.4 Animal feed manufacturing

6.4.1 Overall characteristics

The mission estimates that total Liberian consumption of animal feed averaged 7,000 tonnes per year between 1981 and 1984, of which about 80 per cent was supplied from imports (5,670 tonnes/y, valued at 2.05 million $/y), and 20 per cent by the local production of two feed mills. These feedmills imported some 80 per cent of their inputs.

The two feedmills - one of which was part of Baker Home Grown Poulty Farms - were closed in 1980 and 1984. The current stockfeed requirement is mainly met by imports, with some feed produced domestically by the National Milling Company, primarily a producer of wheat flour for human consumption. According to Ministry of Agriculture estimates, about 4,190 tonnes of feeds were imported in 1986/1987, of which 2,370 tonnes were poultry feeds and 920 tonnes pig feeds. The National Milling Company markets bran for animal feed and recently also began to distribute compound feeds.

Bright Feed Mill, a poultry operation in Kakata, is currently installing a 3t/hour feed mill expected to come into operation by the end of 1989. Although the mill plans to use imported corn initially, it will be supplied with corn provided by local contract growers in the longer run. The greater amount of feed produced will be consumed by the poultry-rearing operation of the company.

Stockfeed manufacturing is slowly starting up again in spite of the fact that it is highly dependent on imports of the major raw materials (corn, soyameal, concentrates, fish meal). In the future it should be possible to substitute a large part of the imported ingredients with domestic supplies of corn, pulses, processed slaughterhouse by-products, and fish meal, if the relevant activities are sufficiently stimulated.

6.4.2 Major problems and constraints

The main constraints on the animal feed industry are:

- shortage of domestic inputs, as farmers have few stimuli to grow and market the required products;

- shortage of imported inputs and spare parts/equipment as a consequence of foreign exchange shortages;

- the present weakness of commercial meat production operations which results in a low demand for animal food;

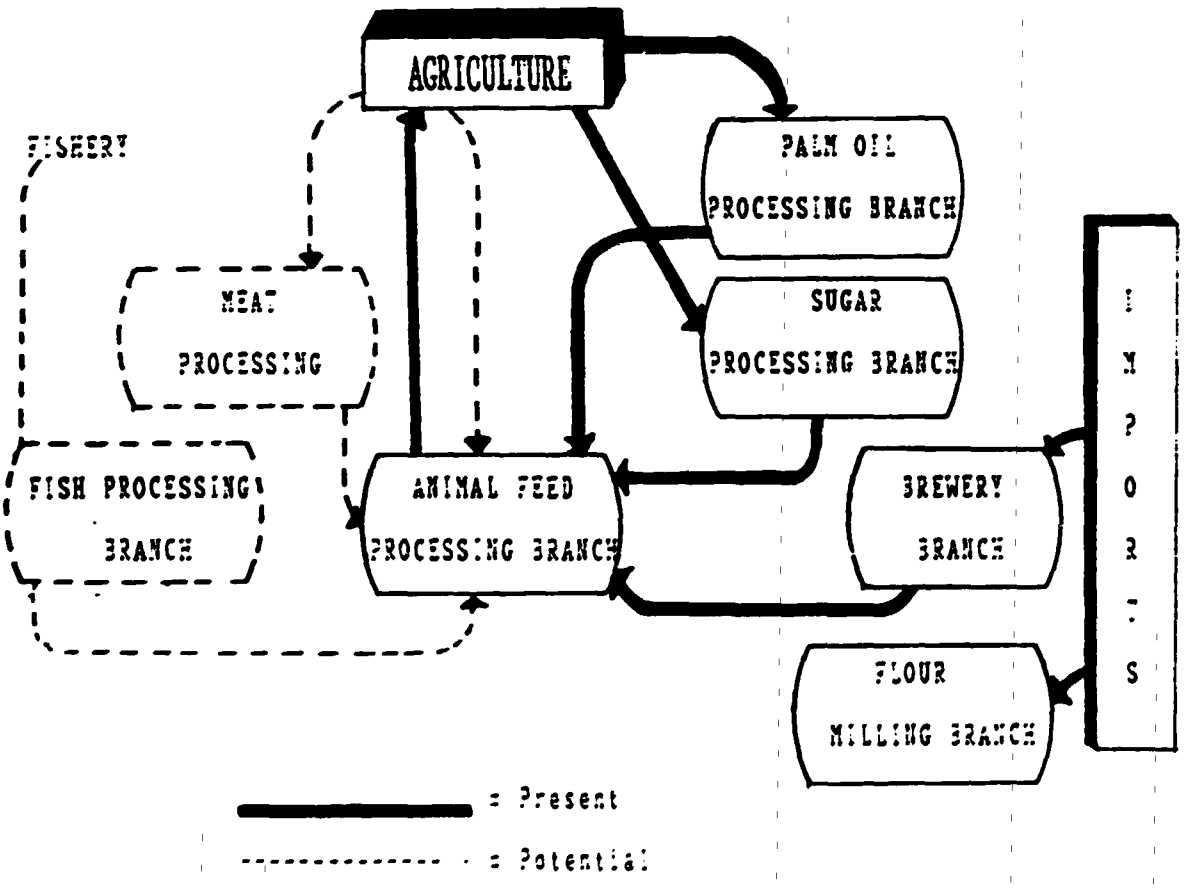
- shortage of capable managers, technicans and skilled workers.

6.4.3 Linkages

Figure 6.4 illustrates the linkages of the animal feed processing branch. A well-developed feed industry usually exhibits a network of backward linkages. The feed industry may use ingredients from agriculture and a large number of food processing branches, which supply by-products directly or after further processing.

In the case of Liberia, where the animal feed processing industry is still in its infancy, the backward linkages are less pronounced. However, it is essential to realize that the feed processing enterprises are of great importance in increasing the resources of many food processing industries by providing a ready market for their by-products or wastes. Although the forward linkages are few, the feed processing branch is in a key position to help increase the supply of animal protein to an increasing population.

Figure 6.4: Linkages - present and potential animal feed processing branch



6.4.4 Ownership pattern

The animal feed processing industry is largely privately owned; the GOL holds a minority interest in one company.

6.4.5 Policies and institutions as they relate to the animal feed branch

The policies and institutions referred to in 4.2.6 are applicable. Prices in this branch are market determined.

CHAPTER 7

PLANT PROFILES

7.1 Bomi Hills Wood Processing and Training Corporation (Bomiwood)

7.1.1 Existing situation

(a) Plant history

The Bomi Hills Wood Processing and Training Corporation was established as a joint venture between the Deutsche Gesellschaft für Technische Zusammenarbeit (German Technical Assistance Group - GTZ) and the Liberian Government. The company is currently a fully-owned Liberian company with a technical assistance agreement with West Germany, which provides assistance with management, operations and maintenance. The agreement is due to end in 1990.

The objectives of establishing the wood processing plant included:

- training of forestry personnel and forest industry personnel, including maintenance and managerial personnel, in a practical environment as a supplement to the training programmes provided by the Forestry Training Institute;

- demonstrating to the Liberian Government that a plant built to process 100 per cent of lumber inputs into finished products could be a viable operation;

- financing the operation through the commercial sales of the products produced by the training programme.

The concept of a training centre at Bomiwood was first outlined in a 1975 International Labour Organization study, which proposed the establishment of a vocational training programme for forest fieldworkers. A second study by the National Carpenters Association (NCA) proposed a forest industry workers training programme. Based on these two studies, the Mano River Union approved the establishment of a full-scale vocational training programme for forest field workers and forest industry workers on a permanent institutional basis. In 1978 the Forestry Training Institute (FTI) was created, which provided classroom training but no facilities for practical training.

Due to the necessity of a practical forestry and forest industry training course specifically oriented toward prevailing conditions in Liberia, the World Bank in 1977 investigated the possibility of establishing a commercially-oriented training centre as part of various promotion programmes. Further negotiations in November 1977 between the World Bank Appraisal Mission, the Liberian Government and the Federal Government of Germany concluded that an in-depth investigation was needed. A feasibility study commissioned from Atlanta Industry (AI) of Germany proved positive.[1/]

1/ AI had been involved in previous forestry studies in Liberia, including a forest inventory project, species identification, and demarcation of forest areas.

The Government of the FRG has played an important role in Liberian forestry since it commenced in the 1960s. FRG provided management inputs at the Bureau of Forestry and Wildlife Conservation (BFC) until 1977, and, since then to the present, at the Forest Development Authority (FDA). During this period, West German efforts included research into exotic and fast growing species and the extraction of logs.

The original feasibility study proposed that the plant should have a theoretical input capacity of 20,000 m^3 per year. Allowing for a 25 per cent loss due to the training programme, a net 15,000 m^3 input would produce an annual output of 7,500 m^3, which would be marketed on both the local and export markets.

The single saw line, commissioned in 1984, could not reach the 20,000 m^3/year target; actual capacity was estimated at 14,000 m^3/year. Therefore, a second smaller saw-line with a capacity of 8,000 m^3/year was added in 1987, which now gives a theoretical total capacity of 22,000 m^3/year input working on a single shift (9 hours x 5 days) basis. To date, the plant's highest input has been only 17,000 m^3 achieved in 1987.

A total investment requirement of US$11m included $5m working capital to be provided by the Liberian Government. To date, $2m remains outstanding. Instead, the GOL has paid the company quarterly installments which the Government effectively considers a subsidy, not a capital contribution. According to the Forestry Development Association, there is no prospect of the Government giving any capital contribution to the project. Moreover, at least two quarters of the so-called "subsidy" are normally paid in arrears. Consequently, the operation has been financially crippled from the outset. Efforts were made to accommodate this deficiency in working capital by a German loan of DM 17M arranged by GTZ from Kredit...talt für Wiederaufbau (KFW) in two installments, with a 10 year repayment period. This loan has only alleviated the working capital deficiency; the situation still has to be corrected. From the commencement of operations, the GOL has treated Bomiwood as a normal concession, not as a training centre. A normal concession has to pay a series of forestry taxes, including stumpage fees. As the Protocol of the original agreement did not set out the possibility of any tax exemptions, Bomiwood is liable for all taxes relevant to normal logging and forestry enterprises. The reason stated for imposing taxes on Bomiwood was the necessity to show the private sector that such a project can be viable.

In addition, since 1987 the foreign exchange surrender law requires that 25 per cent of all foreign exchange earnings be transferred to the Government, with the company receiving Liberian dollars in return at the official 1:1 rate. The remaining 75 per cent of foreign exchange is often not enough to purchase spare parts for normal plant requirements. (For example, the maintenance cost of unsuitable second-hand vehicles purchased for the project is extremely high.) Arrears totalling US$200,000 are now due to the Government.

Due to the shortfall in project contributions by the Liberian Government, GTZ funded a German Evaluation Group in November 1988 to assess the project and re-direct its objectives. The Group will also examine the feasibility of privatizing the company. A preliminary report is being prepared and the final report is due in early 1989.

With respect to the training of personnel, small numbers of mechanics, electricians, equipment operators, production operators and an accountant have completed short training courses of one to six months duration. In 1987 three maintenance personnel undertook training, one electrician and one mechanic from the Booker Washington Institute (BWI), and one mechanic from the Liberian Mechanics Vocational Training Centre (LMVTC).

In 1988, 6 mechanics and one accountant were given courses of practical work in conjunction with their theoretical work at the Forestry Institute. All lodging and eating costs, insurance and medical costs for these trainees are met by Bomiwood under the Liberian state policy of training more manpower.

(b) Management and organization

Bomiwood is a joint venture between the Government of the Federal Republic of Germany and Liberia. The company is wholly owned by the Government of Liberia with the shares distributed as follows:

	Shares
- National Investment Commission (NIC)	200,000
- Forestry Development Authority (FDA)	300,000

The minimal value of each share is L$10. Working capital has been provided by West Germany as follows:

- DM 11.6 million as a loan, at 6 per cent interest; repayment in 15 years including 5 years grace.

- DM 5.4 million as a grant from KFW.

- DM 1.5 million in 1985 as a loan; repayment in 1 year.

- DM 1.6 million in 1986 as commodity aid from GTZ.

This should have been met by the Liberian Government with US$5 million, although only $3 million has been paid to date.

Bomiwood is located in Tubmanburg City, Bomi County, half-way between Monrovia and the border between Liberia and Sierra Leone. The Board of Directors consists of the following persons:

Chairman:	Mr. Shad G. Kaydea	General Manager, Forestry Development Authority
	Mr. George Bolo	Chairman, National Investment Commission
	Mr. David Farhat	Minister, Ministry of Finance
	Mr. Thomas Hanson	Governor, National Bank of Liberia
	Mr. Elijah Taylor	Minister, Ministry of Planning
	Mr. James Peyveh	Managing Director, Forestry Training Institute
	Mr. Peter Ed Weinstabel	Head, German Forestry Mission
	Mr. Kaspar Schmid Hammer	Chief Consultant, Bomiwood Corporation

The general manager, Mr. J. Melvin Thornes, is not a formal member of the Board but participates in Board meetings as Secretary. Board meetings are supposed to be held quarterly. They may also be held when urgent questions arise or when circumstances call for decisions that cannot be made at the general manager/consultant level. However, the very high-level composition of the Board makes it difficult to gather the members together to hold regular meetings, and as a result, Board meetings are rarely held.

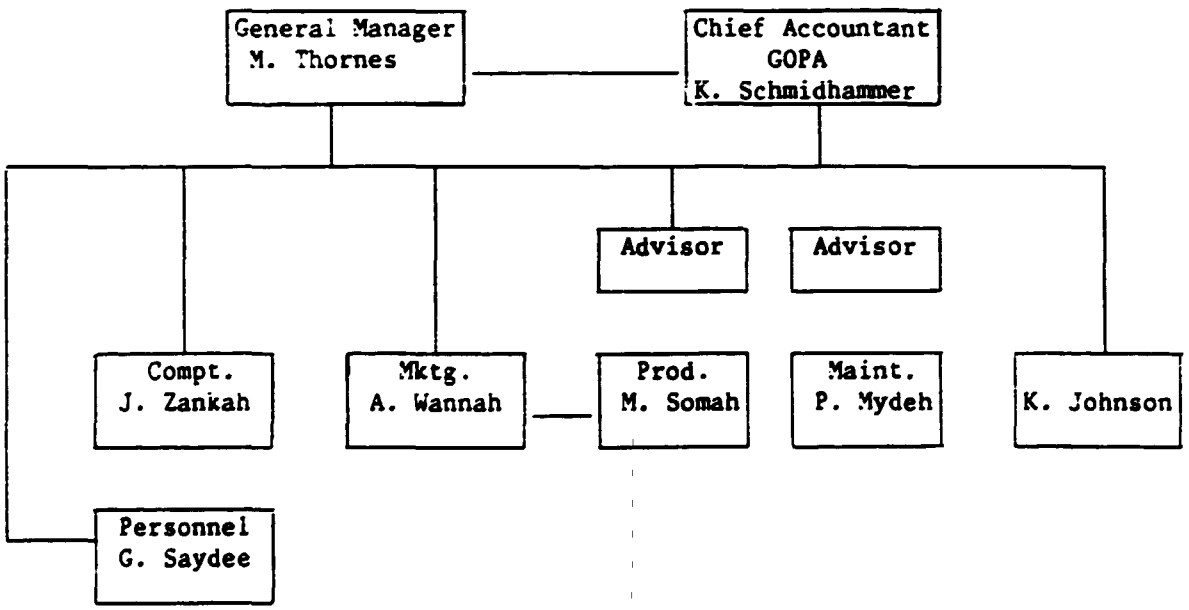
In order to give optimum assistance to the general manager and the staff, some Board members should be selected from the local business community and have appropriate business experience. To have Ministers on the Board of a company of 150 employees with a turnover of $1.64m seems inappropriate, especially since they do not appear to have the time to give their attention to this small company.

The report of the Board's annual meeting, if it is held, is sent to the Legislature and the President of the Republic as well as to the German Forestry Mission.

Because of the joint-venture nature of the project, the day-to-day work of top management has become rather complicated with regard to control of both middle management and workers.

Initially, the idea was to have a German Managing Director and a Liberian Counterpart. This was later changed and, at present, the General Manager is a Liberian, with a Chief Consultant from Germany as Counterpart. These two share power and responsibilities on a 50/50 basis, but the General Manager has no control over the various German advisors.

Figure 7.1: Management organizational structure of Bomiwood



According to Mr. Thornes and Mr. Schmidhammer, this situation will be changed on a trial basis so that all responsibilities will be transferred to the present General Manager, with the Chief Consultant and German advisors acting as pure advisors. This approach is to be welcomed since the present arrangement is based on the assumption that the General Manager and the Chief Consultant can always get along well together both professionally and personally. This is apparently the case with Mr. Thornes and Mr. Schmidhammer, but the possibility of such an arrangement not always working smoothly must be built into the structure.

The General Manager's working day is from 07:00 to 17:00, which includes meetings with the Chief Consultant, discussions with managers and workers in the yard, and a round in the plant checking equipment. He makes at least one trip to the forest every two weeks and is available to the managers at all times. He has worked with expatriates and has no problems co-operating with them.

Mr. Thornes has a B.Sc. (Forestry) from the University of Liberia as well as a M.Sc. in Forestry (Diplomforstwirt) from the University of Freiburg, West Germany. He has been a full instructor at the University of Liberia and General Manager at Liberian Palm Products Corporation, in addition to also holding various positions within the University of Agriculture. Mr. Thornes speaks fluent German, is considered easy to co-operate with, and has very good contacts both with government authorities as well as with subordinates. In the Liberian context he is a very competent General Manager.

When assessing middle management, it is quite clear that certain changes are necessary. The most important is eliminating the positions of Comptroller and Personnel Manager, which are unnecessary in a company of this size. The Comptroller's work can easily be done by the very efficient Chief Accountant and the work of the Personnel Manager could be divided between the General Manager, Chief Accountant and the main managers.

The Personnel Manager is clearly not qualified for this type of position, for which he has no formal training. The Comptroller has an adequate formal background but lacks experience. He is considered uncooperative and even obstructive.

The Sales Manager is a dedicated, honest and capable worker albeit without much experience. He has a B.Sc. in Forestry from the University of Liberia but no formal training in sales. The Production Manager has a B.Sc. in Forestry from the University of Liberia together with postgraduate studies in England and West Germany. He is a very good employee, co-operative and gets on well with colleagues. However, a lack of forcefulness results in laxity regarding quality control.

The Maintenance Manager has a high school education. His handicap in this position is that he is trained as an electrician and needs assistance in maintaining the automotive equipment. He handles the workers well and is himself a good worker, if somewhat disorganised.

The Manager of the forestry concession is Acting Head of this department and is handicapped by not having a degree level education. Until now, he has been unacceptable to the Board of Directors as manager. However, he is considered to be doing a good job and can be given any necessary training. The general opinion is that he should be given the post as manager of the department.

The evaluation of middle management employees is done jointly by the General Manager and the Chief Consultant. Hiring and firing of managers cannot be done without the agreement of the Board of Directors.

No major changes in the organization are contemplated.

Ongoing discussions are taking place about the possible privatization of the company and the possible phasing-out of the German participation in the project, but this is not yet confirmed. The opinion of the management is that privatization would be best for the company.

Past financial management could be questioned, especially with regard to the investment in a second sawline. At the time of the investment, as well as at present, the bottleneck was transportation of the round logs from the forest to the plant. An investment in trucks would have been the logical choice at the time and is also valid today.

Capital turnover is very good, grossing from 1.01 in 1986 to 4.10 in 1987. This is also an indication that the company might be undercapitalized.

There are no signs of serious mismanagement of capital. Preliminary information indicates that the loss in 1988 was reduced to about $250,000, a considerable improvement over previous years.

(c) Financial structure

Bomiwood is a wholly-owned Government of Liberia Corporation with an authorised share capital of 500,000 shares of $10.00 each, of which 320,000 shares were issued at the start of operations in 1984.

According to the project's feasibility study, planned investment requirement was estimated at $11 million. Table 7.1.1, showing capital and loan investment receipts, indicates that the project was under-capitalized at the outset. By 1984, total capital and loan funds invested in the project amounted to US$8.4 million, or $2.6 million less than the required investment. Even by 30 June 1987, total capital and loan invested in the project were still less than the amounts originally agreed as required investment between the GOL and FRG at the project's commencement. The reason the project was under-capitalized was simply due to the GOL's failure to honour its commitments.

Table 7.1.1: Capital and loan investment timing

Year	Capital	Loan
1983	$3,200,000 a/	$4,678,477 a/
		$518,767 c/
1984		
1985	$40,000	
1986	$447,000	
1987	$ 701,783	
	$4,388,783	$5,197,244

* Total capital and loan invested by 1984 (start of operations) = $8,389,244

* Total capital and loan invested at 30 June 1987 = $9,586,027

a/ DM 17 million (or $6,976,676) granted by KFW of which DM 11.4 million or ($4,678,477) represents loan repayable at 6 per cent interest rate for 20 years.

b/ The residual of DM 5.6 million (or $2,298,199) from the DM 17 million grant was utilized as equity capital, bearing no interest and non-refundable. Government of Liberia initial contribution was $901,801 (roughly 1 million).

c/ DM 1.5 million (or $518,767) represents an interest free loan granted by GTZ to be used exclusively for working. Both a/ and c/ were guaranteed by the Government of the Republic of Liberia, based on the financial, technical and economic co-operation agreements between Liberia and the Federal Republic of Germany.

Table 7.1.2 reflects the financial situation of Bomiwood for the period 1985 through 1987.

Table 7.1.2: Balance sheet for years 1985 through 1987
(in L$)

		1985	1986	1987
1.	Current assets	1,783,924	1,376,687	1,360,966
2.	Current liabilities	651,111	890,482	1,060,607
3.	Long-term loan	3,908,861	3,183,048	6,227,362
4.	Fixed assets	4,624,497	4,010,765	4,476,840
5.	Total assets plus pre-operating expenses	5,015,849	4,708,841	4,930,530
6.	Capital employed	5,757,310	4,496,970	4,777,199
7.	Paid-up capital	3,200,000	3,941,783	4,388,783

Source: Bomiwood Financial Statements for years cited

Ratio analysis

The current ratio (the ratio of current assets to current liabilities) has fallen progressively over the years, from 2.7 in 1985 to 1.3 in 1987 (see Table 7.1.3). Working capital (the difference between current assets and current liabilities) decreased over the same period, from $1,132,813 to $300,359. Meanwhile, the debt ratio (the ratio of total debt to total assets) rose from 91 per cent to 148 per cent between 1985 and 1987.

The picture that emerges from the ratio analysis is that Bomiwood is fast approaching a liquidity crisis and that creditors have supplied the bulk of the Corporation's financing. The company's debt is almost entirely owed to the German financial institutions KFW (with 90 per cent due) and GTZ. The repayment period for creditors' funds was scheduled to have started in 1985 (see Table 7.1.1).

Table 7.1.3: Working capital and financial ratios, 1985-1987

		1985	1986	1987
1.	Working capital	$1,132,813	$486,205	$300,359
2.	Current ratio	2.7T	1.5T	1.3T
3.	Debt ratio	91%	129%	148%

Source: Bomiwood Financial Statements (1985 - 1987)

Table 7.1.4 shows the income record over the 1985-1987 period. Based on this table, the company's operations have been negative since its inception, with operating losses increasing from $960,199 in 1985 to $1,455,471 in 1987. The depreciation rates used for the buildings (5%), plant and machinery (16.67%), vehicles (33.33%) and furniture and office fixtures (10.2%) all appear realistic in relation to the conditions prevalent in Liberia and the expected useful life of the assets. The depreciation rates follow the legally allowable rates imposed under the Liberian tax code.

Table 7.1.4: Income statement for the years 1985-1987

	1985	1986	1987
Sales	$1,148,681	$1,140,264	$1,232,247
(Operating loss)	(960,199)	(2,969,586)	(1,455,471)

Source: Bomiwood Financial Statements (1985-1987)

Foreign exchange situation

Bomiwood does not qualify for a foreign exchange allocation because of its objective to be an earner of foreign exchange and the 1986 Act of Legislature requiring all exporters to surrender 25 per cent of their export proceeds to the Government of Liberia. The company therefore has a serious foreign exchange problem stemming from the fact that its export earnings are insufficient to cover the cost of necessary imported spare parts, particularly second-hand trucks. Because of this, the company has failed to meet its obligation to the National Bank of Liberia relating to the 25 per cent surrender of foreign exchange. Indeed, such arrears have accumulated to $200,000, despite regular surrenders since October 1986.

Taxes

Taxes payable by Bomiwood include Forestry Development Authority (FDA) fees of $15.50 per M3, FDA land rental of $0.50 per acre, and motor vehicle tax payable to the Ministry of Finance. Since Bomiwood has been incurring losses since its inception, it pays no corporation taxes.

(d) Buildings and installations

All of the industrial buildings for production and maintenance are made of reinforced concrete supports with in-fill walling of cement blocks. The office building (19m x 14m) is also constructed of cement blocks. All are in very good condition, being only 5 years old and the extension to the production building only 2 years old. Very little maintenance work is necessary over the next few years.

The main production building consists of a 100m x 24m open shed structure and contains saw-line no. 1, the spare parts store, production management offices and saw-doctor section. Attached to this main building is an extension of 35m x 10m, which covers the second sawing line installed in 1987. Ancillary buildings contain the 1,000 KVA and 125 KVA transformers and a 875 KVA generator.

A separate roofed area of 20m x 16m serves as a sorting and packaging area, where the timber is strapped into bundles prior to transportation. This area also contains the wood-treatment unit (Danish Wood Treating Co.) for railway sleepers, which is presently not operational due to lack of demand for the product.

The production facilities consist of the following:

(i) A 12.9 tonne capacity crane, type Keienburg-Essien, over a log storage area of 27m x 100m with a normal storage height of logs up to 3.5m with 50 per cent space utilisation. Approximately 4.725m of timber could be stored in this area (2.5 month requirements). Additional storage facilities for logs could, however, be made on open ground adjacent to the area covered by the crane.

Because one of the two travelling brake motors (11 Kw) has been damaged by falling timber, the full capacity of the crane cannot presently be utilised. All loads have to be balanced on the grab closer to the good motor. Prior to loading into the grab, logs are cut by chainsaw into lengths required by the customer, resulting in many off-cuts of good wood of varying sizes being thrown away as waste. A small amount of this waste is utilised to manufacture table-tops. As each log is loaded into the grab the log number, species, length and average diameter is recorded. The volume is subsequently calculated at the end of each working day.

Logs from the crane grab are then fed into one of the two saw lines.

(ii) Saw-line No. 1

This line of 14,000 m^3 input capacity per year was supplied by Canali KG of West Germany. Saw line No. 1 is currently operating at approximately 85 per cent efficiency with 15 per cent downtime, which appears reasonable for such an operation. All equipment was manufactured in 1983 and commissioned in 1984 and consist of the following items:

- One delivery chain conveyor: This conveyor is frequently damaged by the crane grab, mainly due to operator error, resulting in downtime for the entire line. The conveyor has no spare motor (size 8.1 Kw), although to date this has not resulted in lost production. There is no local supplier of such motors and one would have to be flown into the country should any problem occur.

- One chain cross-conveyor: During transportation to the transfer car, logs tend to twist on this conveyor and cut the chain. Some down-time due to this cause is inevitable given the varying nature of the logs entering the plant. The hydraulic unit to this conveyor is inoperative due to lack of spare parts; therefore, the hydraulic unit from the first feed conveyor of the second saw line has been canabalised to maintain production on the first sawing line.

- Hydraulic flipper bars: This is a four bar unit currently operating with only three bars since one hydraulic cylinder is being repaired. While no problems have been experienced to date, more load is placed on the remaining three cylinders.

- Transfer car to sawing unit: The transfer car feeding the log to the saw contains four hydraulic holding cylinders. No problems have been experienced with this unit.

- Main Saw-type Canali BBSV 1800 Pioneer RFH 1983, complete with saw-dust extraction unit:

This sawing unit has an actual input capacity of approximately 14,000 m^3 per year working on a two shift basis. Saw blades are changed regularly every 2 - 2 1/2 hours, each change taking approximately 10 minutes. No major problems were reported but it was apparent during the visit that the thickness of the cut boards varied considerably. At a setting of 29mm, boards were being produced with thicknesses varying from 25 to 28 mm. For export quality such variations are not acceptable, if the highest price is to be demanded. For each cut the operator sets the required thickness on the control panel but more care appears necessary to maintain accurate cutting thicknesses.

- Cutboard transfer conveyor: This conveyor together with the board collection flippers delivers cut boards to the edger unit. No serious problems occur with this conveyor or with the associated roller conveyor, which transports waste off-cuts from the log to the final waste conveyor. No regular quality control checks are made on the wood at this stage.

- Edger Unit, Paul type 51200, 1983, 90Kw: The edger unit is capable of taking boards up to 1m wide; therefore sawing line No. 1 is used for all the larger logs, with smaller ones being handled by sawing line No. 2. Waste from the edger unit is collected on a wheelbarrow unit for transport to the waste conveyor.

  No major problems are experienced with this machine, although bearings require replacement at regular intervals.

- Sizing Cross-cut Saw, Canali Kg type PCA 600, 1983: All boards from the edger unit are sawn to length by this cross-cut saw depending on customer requirements. However, there seems to be little co-ordination between the length of board required by the customers and the lengths of board available to the cross-cut saw to minimise wastage. During the plant visits, relatively small lengths of board required by the customer were cut from much longer pieces, leading to off-cuts of up to 2m in length. These off-cuts were discarded onto the waste pile and, although some pieces were possibly salvaged later for pallets, the resultant waste at this point appeared far too excessive.

  Matching available timber lengths to both existing customer orders and normal standard timber lengths could reduce wastage at this point considerably.

- Re-saw Unit, Canali TB 1250 RP 40H, 1983: Any logs which cannot be sawn by the main saw into normal boards due to splits in the log are cut into smaller pieces by the main saw, which are then re-sawn into posts or small size boards. All waste is sent by conveyor to the main waste compound.

(iii) Saw line No. 2

This line was installed in May 1987 and has an input capacity of approximately 8,000 m^3 per year. The equipment was supplied by Braun of West Germany and consists of the following items.

- Cross-Feed Conveyor No. 1: This unit acts as a collection unit feeding logs to the main chain conveyor. It is currently inoperative since the hydraulic unit has been removed for use on Saw-line No. 1, so that that line can remain operative.

As a consequence, the crane grab has to feed directly onto the main chain conveyor, which could be more easily damaged by the grab unit than by logs fed from the cross-feed conveyor. Lack of financial resources was stated to be the problem in obtaining spares for all the hydraulic units in the factory.

- Cross-feed Conveyor No. 2: This conveyor feeds logs to Saw No. 2 and has had few problems since installation. Occasional twisted logs have caused minor damage.

- Hydraulic Flipper bars: This unit feeds the logs onto the transfer car and is currently operating with no problems.

- Transfer car to sawing unit: The transfer car, which feeds the log to the saw, contains four hydraulic holding cylinders. No problems have been experienced with this unit since installation in 1987.

- Main Saw - type Braun PBSV 1600 UNI RG4 1986: This sawing unit has an actual input capacity of approximately 8,000 m^3 per year working in conjunction with saw line No. 1. Saw blades are changed approximately every two hours. No major problems have been experienced with this machine, except that when the voltage of the power supply falls from the standard 440 to 380V the electronic control panel cannot work. In comparison, line No. 1 can operate with voltages as low as 370V. Fluctuations in voltage are extremely common and therefore it is necessary to frequently change to the back-up generator whenever the voltage falls too low. This action is only economic, however, when both lines are operating simultaneously; it is not practical for a single line. It should be noted that there is no spare electronic control unit for this machine. Therefore, if a problem results, the machine will be idle until a replacement is flown in.

- The dust extraction for this saw is linked to that installed for the saw on line No. 1 and works efficiently. Examination of the cut boards from this machine showed a much greater degree of accuracy than that of line No. 1.

- Edger Unit, Type Bernhard Braun Type PVAH 1986: The edger unit is only 700mm wide with a 45KW motor and therefore has to be restricted to the smaller logs. Larger logs have to be cut on line No. 1; the alternative is to first cut the logs into smaller units, but this is likely to result in more waste.

- Cross-cut Saw, Type Paul 2740, 1986: Boards from the edger unit are cut to size, according to the current requirements of the customers. As on line No. 1, excessive waste appears to be generated at this point. This waste would be reduced by a systematic cutting procedure to maximise the utilisation of the incoming boards from the edge cutter, by cutting both a mix of standard board lengths and the special lengths demanded by some customers.

Saw line No. 2, as with line No. 1, is operating also with approximately 15 per cent of downtime (85 per cent efficiency) but only for 8 months of the year. Lack of logs caused by transportation and logging problems closed the line for 4 months of the year. Wood from both crosscut saws is subjected to a selection procedure, following which some substandard pieces are re-sawn into various lengths for pallet manufacture. Some of this resawing is carried out on a contract basis, the contractors being under the direct supervision of the sawmill manager.

(iv) Wood dryers

Wood for the production of moulded items and doors must be dried down to 15 per cent moisture content from a normal fresh wood content of 41 to 48 per cent. The dryer building consists of two three-track dryer units, 6m long x 6m wide x 4m high, which normally contain approximately 29 m^3 of wood per chamber depending on the thickness and length of the boards. The drying is currently carried out on a very slow cycle with intermittent spraying over a period of up to one month. The drying period is extended as the unit operates only from 7:00 a.m. to 11:00 p.m daily. Heat for the dryers is supplied by a Lambion boiler with a capacity of 0.25 Gcal/hr, 300 KW at 3.5 bar, 120 degrees centigrade. The temperature recorders for the dryer units have not been operational for 3 1/2 months due to lack of spares. As a result, temperature measurements are being made with a portable indicator until such time as the spare parts are provided.

The boiler was originally set up with a facility for utilising saw-dust. While this equipment is operational, the only fuel being used is waste wood blocks. The reason given is that there is ample waste wood in larger pieces and therefore no necessity to use saw-dust. All saw-dust is currently burnt on open ground adjacent to the factory.

During 1987, 263 m^3 of wood was dried in the first 6 months, an average of approximately 44 m^3 per month.

(v) Moulding Shop

The following equipment is available in the moulding shop:

(i) Bauerle shaper 7.5Uw 1985
(ii) Johansen Bench Unit type 18E, 1982
(iii) Pauhous finishing machine 1982
(iv) Weinig tongue and groove machine, 6 side type U17H, 1983
(v) Paul splitter type K40/800
(vi) Crosscut saw
(vii) Bauerle bench saw
(viii) Paul bench saw
(ix) Bauerle vertical saw
(x) 37UW sawdust extractor unit

All the woodworking equipment appears to be in good condition, being utilised approximately 70 per cent of normal production time on average. However, the moulder achieves only 36 per cent of its rated output due to inefficient use of personnel, insufficient local sales to absorb its potential output of tongue and groove panels, and the inability to produce export-quality moulded products. Door manufacture is continuous, with five persons employed full-time on this operation. The quality of the doors, while acceptable for the local market, is not of a quality to be acceptable on the export market since the workmanship of the joints is quite poor. Further training in this area would definitely be beneficial. The tongue and groove products have a good local market, but it is the mission's opinion that the final finish is not good enough for the export market. The actual tongue and groove machine appears to work satisfactorily (albeit inefficiently in terms of output), but it is presently only fitted with two finishing knives to form the final finish. Attaching a finer sanding unit immediately after the two finishing knives appears to be a logical and inexpensive solution to this problem, and would enable the factory to supply this type of product to the export market, thereby increasing its foreign exchange earnings.

The only serious problem with the equipment in this area was the recent failure of the sawdust extractor motor for which no spare was available. Since being repaired, however, there has been no further problems. Without the extractor unit, the tongue and groove machine cannot operate and, as this is a high value product, it would be advisable to carry a spare motor on stock for this unit. This becomes even more important if export orders are involved.

With regard to safety matters in this area, it is clear that employees must be better trained in the correct use of equipment. On one saw unit with a foot operated switch, where two serious accidents had already occurred, the operator was observed to be far too close to the machine, with the foot operated switch directly against the saw. This was the identical situation which had led to two previous amputations. In other parts of the shop, operators were operating machinery in a safe manner but it is clear that not all personnel are aware of the dangers and that safety training should be reinforced.

The compressor supplying compressed air to the moulding shop (Type Mehrer, 1986, 11LW, 16 bar, 1500L capacity tank) has been operating without one of the pistons since November 1988, but with the support of a smaller compressor (Stenhog 1982, 500L capacity tank). While no serious machine downtime has resulted from this, the resulting vibration from the compressor caused by the lack of a piston could lead to further problems. It is not known when the spare parts will be available to repair this machine.

(vi) Saw doctor shop

As saws must be replaced every 2 - 2 1/2 hours in normal operations, the factory is equipped with all the necessary equipment for the resharpening, repair and welding of the repaired saw blades:

a) Saw sharpening unit, type Original Vollmer CANAS, 1986
b) Ideal saw brazing unit, BLS 320
c) Alber saw sharpening unit, type AW23-1987
d) Vollmer saw sharpener, type HM , 1982
e) Vollner FS70F blade checking machine
f) Vollmer CHH1 20H blade checking machine, 1986
g) Vollmer saw sharpener, type CANAS 1982
h) Vollmer saw sharpener VWMS 1982.

All machines appear in excellent condition and have been well maintained. Saw sharpening facilities are therefore adequate for a number of years.

The only current problem in this area is lack of heating equipment for one of the electrobrazing units, which is awaited pending the availability of foreign exchange.

(vii) Substation and generator equipment

The factory is equipped with a 1,000 KVA transformer (Sachenwerk), which is adequate for both sawmill production lines. In addition, there is a 125 KVA transformer, which is linked to a 875 KVA generator (Siemens) during periods of low voltage. During total power cuts, the generator operates alone. The compensation unit in the main distribution board is presently inoperative, which means that voltage fluctuations tend to be worse than normal. During January 1989, the generator had to be utilised on most production days due to either low voltage (less than 370 volts) or total power failure. Because only one large generator has been installed for production purposes, it is only economic to operate it when both production lines are working simultaneously. The seals are leaking on this generator and should be replaced as soon as the required spares are available. In the meantime, the machine must be carefully checked and cleaned every time it is run. In addition to the large generator, there is a 31.2 KVA unit, presently inoperative, which supplies power to the dryer unit and workshop during periods of power failure. The insulation on this machine is currently incomplete and new connection terminals are awaited.

(viii) Maintenance workshop

The workshop equipment includes all the essential items for normal routine maintenance and repair of the factory production lines and vehicles such as:

a) Turning lathe
b) Motorised hacksaw
c) Column drill
d) Welding machine
e) Grinding machine
f) Trolley jack
g) Lubrication machinery
h) Lantern hoist
i) Pressure unit/water air
j) Schafo tyre removal machine
k) Hofmann wheel balancing machine

Maintenance is carried out by a total of 22 staff, including mechanics, plumbers and electricians, over 7 days. However, a severe constraint with regard to the main machine lines, trucks and other mobile plant is the lack of spare parts caused by shortages of foreign exchange. Apart from this, the maintenance department appears capable and well-organised. Downtime on both sawing lines averages approximately 15 per cent, excluding the downtime caused by lack of raw material inputs. For such an industry, this level of downtime is not too unreasonable and would undoubtedly be reduced if spare parts were readily available. The extremely high downtime of the logging trucks - between 55 per cent and 80 per cent depending on the individual truck - is due not to a lack of maintenance, but to the purchase of unsuitable second-hand vehicles which cannot cope with the local operating conditions in Liberia. The only solution is for the company to purchase new trucks designed for the harsh working conditions in a tropical environment.

(e) Inputs

Bomiwood has two forest concessions: one in the Genemana Gola National Forest of 125,000 acres (57,00 hectares) about 60 km from the plant, and one in the Kpeile National Forest comprising 227,000 acres (103,000 hectares) at a distance of about 100 km. Thus, the total forest area available to Bomiwood is 352,000 acres or 160,000 hectares.

A large number of different species of trees are represented, many of which are highly valued hard woods. They are suitable for furniture, processing into veneer and plywood, construction timber, and so on. The red wood type of trees include Makore (Tieghermella Heckelii), Limbali (Gilbertiodendron Preussii), Kusia (Nauclea Diderriclui), Niangon/Whismore (Tarrietia Utilis), Oldfieldite (Oldfieldia Africana), Didilolia/Brouton (Dideolia), and Lovoa (Lovoa Trichiliodes).

Other species with lighter fine grain include Chicken Foopoo (Analiopsis Tabonensis), Framiec (Terminalia Soorensis) and Limba (Terminalia Sveberba).

For management purposes, the forest is divided into 640 acre (290 hectare) blocks. These are used as a basis for inventory, planning and the subsequent felling and extraction operation. Forest management also includes the necessary construction of roads for transport of the logs out of the forest area. Reafforestation is the responsibility of the IDA and paid for by the forest concessionaire, through a fee of L$3 levied on each m^3 of logs taken from the forest.

Estimated quantity of timber

According to the inventory, the average volume of a tree of a minimum of 0.6m at breast height is $3m^3$. Each block carries, on average, 3,000 m^3 of timber of required minimum diameter for felling, or about $10m^3$ solid measure of timber per hectare.

The two concessions are divided into 550 blocks of 290 hectares each, indicating that the present availability of logs is about 1.65 million m^3. At present, ten blocks are reportedly harvested per year, or 2,900 hectares. Counting from the start of operations in 1984, the two concessions would be harvested once by about 2050.

Restrictions

The general picture is upset by farming and mining which are carried out in the area despite the fact that these activities are prohibited. Shifting cultivation is practiced by groups of people, the majority reportedly living in towns and villages. No data are available quantifying the area of forest land which is burnt off every year. However, from a visit to the area, this is estimated to be on the order of 10 hectares or more per year at one location only. The long-term detrimental implications of shifting cultivation on the natural forest resources are well documented from areas where this has been permitted freely. Assuming that shifting cultivation is practical in 5-10 locations within the Bomiwood concessions, each of about 10 hectares per year, approximately 1,000 hectares would be spoiled in a 10 year period. This represents about one-third of the area which is harvested per year at present. But contrary to sound forest management, there are no healthy younger trees left that will grow into capital timber, and regeneration thus takes a long time.

Mining concessions may be given for gold prospecting in particular, and the size of such concessions may vary. As a rule, they extend about 150m on each side of a water course which is used to get water for the panning operation. One particular claim which was visited outside the Bomiwood concession extended over 4km, or a total area of 12 hectares. There seemed to be no contacts between the forestry and the mining people which could possibly have resulted, at the very least, in the most valuable trees being felled and utilised in the wood processing industry.

When the mining operations are mechanized, substantial earth construction works are involved in order to secure enough water for the process. These dams, etc. are reportedly not removed after mining operations cease. This is likely to have a detrimental effect on the forest land upstream.

Harvesting procedure

Harvesting of the trees is basically organised in two teams for felling, extraction, scaling and cutting the logs. The capacity for felling appears to be adequate for the present volume of harvesting the forest. However, extraction of the trees has proved to be a constraint, at least from time to time, when the "skidders" are out of operation due to mechanical faults. In 1988 the downtime was on average 94 days for each, implying that the total loss of logging capacity was probably of the order of 10,000 m^3 that year.

Control Procedures

To ensure that trees have a diameter at breast height of not less than 0.6m, which corresponds with FDA regulations, the standing trees are marked with a number on the trunk and the number is entered on the block-map. At felling, this number is transferred to the stump and to the log. Checking on a sample basis is carried out by an FDA officer before and after felling.

When the whole tree is extracted to the landing, the scaling is checked by an FDA scaler before the logs are cut and numbered. The system makes it possible to follow the logs backward in the chain of activities from the lumber yard at the sawmill to the spot where it had grown.

Perso[illegible] and equipment

The forestry section of Bomiwood is headed by the Forest Manager and employs a total of 46 people for the following major tasks:

Forest management	1
Felling	16
Log extraction	9
Scaling, cutting	7
Roads	4
Cutters, clerk, fuel attendant, watchmen	9

The rolling equipment were all new when the project started in 1984. In the past, downtime due to repairs and maintenance has been acceptable, although age is now beginning to show. Difficulties in obtaining spare parts adds to the problems; for instance, one crawler tractor has been inoperable for the past six months. The list below enumerates the equipment available and their downtime in 1988. All equipment is manufactured by Caterpillar.

Type	Downtime, days June-December
D8 Crawler	76 *
D7 Crawler	208
528 Skidder	99
528 Skidder	89
966 Loader	-
910 Front Loader	78 *
Grader	220 *

* June-October

In January 1989, the D7 was still not operational. In the future, serious difficulties can be expected with excessive standstill of this equipment if sustainable arrangements are not made to maintain a reasonable spare parts stock at Bomiwood.

Transport

Road transport from the log landings in the forest to the Bomiwood sawmill is carried out by 5 trucks equipped with log transport semi-trailers capable of loading about 25m^3 of logs. In order to satisfy the demand for logs for full capacity utilisation of the saw mill operating one shift (20,000 m^3), 85 loads per month must be achieved. So far, 77 loads in one month is the best result, falling far short of the requirement. In addition, stockpiling of logs of 5,000 to 6,000 m^3 at the saw mill is necessary in order to secure a sufficient number of logs for the rainy season when virtually all road transport comes to a halt.

A reasonably good road network has been constructed, as required, in the concessions. However, a large portion of the transport roads are also used by others. The surface of these mud roads is very poor and the maintenance is sub-standard; hence, the wear and tear on the vehicles is abnormally high. All trucks were purchased second hand from West Germany and the maintenance and spare parts costs have been excessively high.

The downtime for the fleet of trucks is unacceptably high, although exact records are not available. It appears, however, that lately the trucks have been inoperable for an average of 15 days a month for maintenance and repairs. It is thus estimated that the fleet of log transporting trucks performs at about 30 per cent of maximum capacity (885m^3 per month or 10,500 m^3 per year).

Assuming an acceptable downtime for maintenance and repairs of 15 per cent, the monthly and yearly transport capacities should be 2,340 tonnes and 28,000 tonnes, respectively.

It is concluded that four new trucks of suitable design for heavy duty transport under severe conditions would satisfy current requirements. To allow for a reasonable margin as a reserve, the best of the five existing trucks could be retained.

In summary, the log wood transport from the forest area to the sawmill constitutes a major constraint which can only be remedied by replacement, totally or partially, of the existing fleet of trucks for log transport.

Other sources of round logs

New government regulations as of 1 March 1988 stipulate that all logging companies must turn 10 per cent of their total log harvest into sawn timber. Because the majority of existing logging companies in the region have no saw mills of their own, this presents Bomiwood with the opportunity to take up contract saw milling. The price for such contract sawing has tentatively been quoted at L$70 per m^3 round log intake.

(f) Product range

The commercial production of the plant began in 1984, with sawn lumber for the local and export markets. Further processing to mouldings and crates began in 1986.

Table 7.1.5 gives the range of products sold in 1987/1988. Exports to West Germany accounted for over 95 per cent of the export trade, and included Niangon, Limbali, Tali, Makore, Abura or Baougossa (Ekki).

Table 7.1.5: Bomiwood - volume and value of sales, 1987-1988

Sales	Products	Sawnwood Exported	Sawnwood Domestic construction	Sawnwood Domestic carpentry	Mouldings	Crates, pallets	Wastes[a/]
1987							
In volumes (m^3)		1,731.5	2,173.7	128.1	116.5	983.7	102.?
percentage of total		33.1	41.5	2.4	2.2	18.9	1.9
		607.2	551.0	42.1	89.6	112.3	112.3
		42.9	38.9	3.0	5.9	7.9	7.9
1988							
In volumes (m^3)		945.0	2,855.0	194.0	290.0	1,032.0	159.0
percentage of total		17.3	52.2	3.5	5.3	18.8	2.9
		356.1	625.4	56.3	144.2	121.8	31.7
		26.7	46.8	4.2	10.8	9.1	2.4

Source: Accounts, sales department
Notes: a/ Tongue/groove, battens, skirtings, panel doors
b/ Short length cuttings (0.9m to 1.8m) of various sizes

Production costs of construction sawnwood are not competitive with the sales prices prevailing on the Monrovia market, mainly because of the excessive cost of input logs (due to felling and transport costs) and the high depreciation costs of the sawmilling equipment. Operating costs only account for 250 to 350 L$/$m^3$ sawnwood at Bomiwood, while sales prices on the local market vary between 200 L$/$m^3$ and 250 L$/$m^3$.

Efforts have been made, in spite of the limited sales budget available, to widen the company's product range (mouldings, crates and export sawnwood), as well as to promote the use of lesser-known timber species in the domestic carpentry products. However, the results obtained to date remain limited. Export manufacture, the most profitable activity, is determined by the development of export demand, itself almost entirely dependent on the promotion activities of two foreign-trained agents, who have little contact with the sales management in Bomiwood.

In the absence of additional external financial support, the company is considering changing the range of its products entirely between 1989 and 1993 by:

- utilising the existing additional felling and extraction capacity for supplying an average 19,500 m^3/year round logs for export in order to increase foreign exchange earnings.

- operating the sawmill plant at full capacity in one shift, and selling 20 per cent (only) of this output on the export market and 80 per cent on the local market, where the share of crates and mouldings in total sales would be increased.

The decision regarding the future range of products remains undecided. It depends on the conclusions of an assessment study of the plant recently carried out by a German team of experts.

(g) Plant performance and price structure plant performance

The two sawmilling lines have a total installed capacity of 9,000 m^3 of sawn products in one shift at the present rate of recovery. This corresponds to an input of 22,000 m^3 of round logs (14,000 m^3 of logs for the initial line installed in 1983 and 8,000 m^3 of logs for the line installed four years later).

The total installed sawmilling capacity, on a one-shift basis, is used at an overall level of approximately 65 per cent, corresponding to an annual intake of 18,000 m^3 of logs and an output of 6,620 m^3 of sawn wood in 1987/88. However, it should be noted that the first saw-line is used continuously throughout the year at an efficiency of 82-85%, which is acceptable for this type of industry. The second saw-line also operates at a similar efficiency of 85 per cent for the periods it is utilized, but under present conditions it is impossible to operate this line continuously throughout the year due to the lack of raw material input, which is particularly severe during the rainy season.

The insufficient availability of round logs in stock, partly due to the low performance of the extraction and transport operations, constitutes the major bottleneck in the increase of production of the sawmill at two-thirds level.

The installed moulding capacity of 800 m^3/year is underutilised; the production of 290 m^3 mouldings in 1988 represented a utilisation rate of only 36 per cent of capacity.

The sales of sawn wood per employee, as an indicative figure of the global performance of the plant, increased from an average of 35m^3 in 1984/1985 to 41.5m^3 in 1987 and 44.2m^3 in 1988.

The recovery rate of timber (defined as the percentage of sawn timber output versus the intake of sawn logs), decreased sharply over the period, from 57.5 per cent in 1984/1985 to 46.5 per cent in 1987 and 36.8 per cent in 1988.

Wastage

The recovery from the sawmill in terms of sawn timber for marketing compared with input of round logs is very low by any standard. The waste occurs at various points along the processing line and includes (apart from sidings) volumes of sawn-up wood cut off to obtain specified ordered dimensions. Some of these are used for manufacturing furniture, doors and crates.

It is the opinion of the Mission that unless the recovery rate is improved substantially, Bomiwood will not become an economically viable enterprise.

Moreover, it appears that the two main reasons for the excessive volume of off-cuts, a limited quantity of which is used for further processing, is related to lack of adequate co-ordination between scaling the logs initially in the appropriate length, and the marketing procedure. The increase of wastage by some 4 percentage points since 1986 has not been satisfactorily explained.

All waste is channelled through a yard outside the fenced-in saw mill compound. There, the saw dust is burned and the waste, including all categories of wood, are sorted and sold at a price of L$7.50 for a fully-loaded pick-up truck against a receipt for L$5. Part of these waste loads are composed entirely of perfectly good lengths of timber, ranging from around 0.75 metre to 2 metres. The activity on the waste yard appears to be carried out, or supervised, by four or five small entrepreneurs who pay the company according to the receipts.

The closing of the waste yard to the general public and adoption of reasonable market prices, according to the quality of the timber, is likely to eliminate discentives for the saw mill personnel to aim for an improved recovery rate.

Wastage also occurs at the landings in the forest where the logs are cut to the desired length. Some of the cuttings, from a few decimeters to 1 or 2 meters, are justified from a quality point of view; others appear to be sawn off for other reasons.

There is an urgent need to investigate, in detail, the wastage issue throughout the line of operations and to elaborate modified working routines or management procedures to eliminate the wastage as much as possible.

Although impossible to quantify within the context of this study, it is certainly possible to reduce the wastage substantially. Table 7.1.6 shows the impact of reduced wastage on increased volumes of sales and recovery rate based on nominal plant capacity, assuming 80 per cent capacity utilisation and the present recovery rate.

Table 7.1.6: Impact of reduced wastage on sales and recovery rate

Round log inputs	Wastage reduction (per cent)	Sawn wood m^3 output	Recovery rate of round log inputs (per cent)	Waste m^3
17,600	0	7,040	40	10,560
17,600	25	9,680	55	7,920
17,600	35	10,740	61	6,860
17,600	45	11,790	70	5,810
17,600	55	12,850	73	4,750

Source: Mission's calculations

If valued at a market price of L $250/m³, the company's revenues would be improved by L$ 1.715 million if the wastage is reduced by 35 per cent. This scenario is considered quite feasible, and additional costs would be negligible (see also Section 7.1.2 (b)).

Costs and price structure

Production costs

Logging costs in Bomiwood currently amount to L$ 60/m³ to L$ 70/m³ for round logs delivered to the sawmill yard. The market price of round logs, determined by the prices charged by the large logging operations, vary between L$ 30/m³ and L$ 45/m³.

Production costs of logs are divided up as follows: 37 per cent for log extraction, 25 per cent each for FDA charges and cost of transport from the felling area to the sawmill yard, 7 per cent for felling costs and 6 per cent for administration and road construction.

The very large cost of spare parts and maintenance of the extraction and especially the transport equipment are the factors determining the excessive share of these operations in the logging costs.

The production costs of the sawmilling operation increased steadily, from 250 L$/m³ sawnwood delivered to customers in 1984/1985 to LS 325/m³ in 1986/87 and L$ 355/m³ in 1987/88. These production costs did not include the cost of round logs.

Total production costs of sawnwood, varying currently between L$ 380/m³ and L$ 420/m³, are not competitive with the market prices of sawn wood products prevailing on the local market which currently vary between 250 L$/m³ and 350 L$/m³. The company has been selling these products at a loss since 1985.

The cost of sawn timber is competitive and the products are requested on export markets. The low level of export promotion and marketing, however, led to a fall of nearly 50 per cent in the volume of sawn wood exported in 1988 compared with 1987, in spite of the fact that the average export price increased by 7.5 per cent during the same period.

Price structure

Export prices of sawn wood are determined by the international market; local prices are set by local demand.

The accounting operations do not take into account the wood "wastage" - that is, the difference between the output of the sawmill and the real volumes of sawn products shipped to customers. This wastage amounts to around 20 per cent of annual sawn wood production, that is about 4,900m³ of sawn wood between 1985 and 1988.

In order to make Bomiwood's products price competitive, an improvement in the sawmilling process and an increase in the rate of recovery of timber have to be achieved. Indeed, these will have to be combined with strict monitoring of sawn wood wastes and their incorporation into the pricing system of the products.

Import dependence and protection

Bomiwood supplies its own major input - round logs - from its own forestry concession. However, it imports all machinery and spares from the FRG, paying no tariffs or duties on any of its imports.

(h) Markets and competition

The production of sawn wood in Liberia amounts to about 14,000 m^3 per month of which Bomiwood produces about 6,800 m^3 or about 45 per cent. About 1,700 m^3 or 24 per cent of Bomiwood's production is exported to Europe, with West Germany purchasing 95 per cent and other European countries the remaining 5 per cent.

Bomiwood's main competitors are Maryland Logging Corporation and Liberian Timber Corporation, together accounting for about 60 per cent of Liberia's total production. However, they do not provide any major competition on export markets.

Bomiwood's total sales reached L$1,640,000 in 1986, representing an increase of 33 per cent over 1987 sales. The 1989 budget projects sales of L$2,000,000, of which 60 per cent is for the local market and 40 per cent for export markets. During the last few years there has been a marked upward trend for sawn wood in both markets. The main bottleneck which might jeopardize these plans involves the transport of raw material from the field to the plant, which has up until now prevented the plant from reaching full capacity.

Eighteen people are employed in the sales department, only three of whom are directly involved in sales. The remaining 15 are involved in sorting, grading, packaging and so on.

In West Germany, the most important export market, Bomiwood uses two companies to sell its products on a commission basis (4 per cent commission). In order to avoid becoming too dependent on one country, there are plans to diversify the export market. Bomiwood is at present looking for marketing assistance from CDI in Brussels and has asked CDI to try to arrange contacts with potential buyers in Europe.

Greece has shown interest in products made from rare species of wood. Other markets for sawn or tropical wood species would be the UK and the USA, although these markets have not yet been explored. For all export markets, especially in Europe, it is essential that the drying process of the wood is not overlooked.

The General Manager is convinced that surrounding countries could become a potential export market. On the local market the company is competing successfully, even if its prices are slightly higher than those of its competitors. This drawback is overcome by the company's higher quality and by the introduction of a guarantee on the processed products.

Bomiwood has never generated any profit and is having serious liquidity problems. To solve the problems temporarily, the management intends to obtain permission from the GOL to increase the felling in the concessions and to export round logs.

This is an extraordinary suggestion coming from a saw milling enterprise, established with the objective of "demonstrating (to the Liberian Government) that a plant built to process 100 per cent of lumber inputs into finished products could be a viable operation".

It is suprising in itself that Bomiwood has not been able to demonstrate an acceptable overall performance, technically and economically. A retreat at this point would be to jeopardize the entire concept of using renewable natural resources as a basis for industrial development. This is the only alternative in many regions to create employment opportunities from which Liberia as a nation will benefit. Unemployment is a waste of a valuable resource!

Apart from the above-mentioned market survey by CDI, no significant expenditure is planned under the heading of sales promotion. Approximately L$5,000 a year is said to be allocated for this purpose. Because the market is very buoyant, there is no strong argument to support any significant expenditure or marketing before the transport situation is improved.

Present production cannot meet an increase in sales either on the local or export markets. The main constraints are transportation of raw material and storage facilities in the harbours.

Except for some help from the Liberian Embassy in the US, Liberian government agencies have not provided any assistance to export sales promotion. Bomiwood did participate in a wood exhibition arranged by the West German Embassy in Monrovia.

Except for transporting finished goods to the nearest harbour for shipping abroad, no distribution system exists in the company. Local sales are normally performed "at the factory gate" where the customer picks up the goods at a slightly lower price.

(i) Constraints

Management and organisation

There are too many top level persons on the Board of Directors. The organization is very top heavy and should be trimmed down. Posts of Comptroller and Personnel Manager should be eliminated.

Financial structure

The most critical financial constraint is inadequate capital. The GOL, which was to have contributed an initial equity capital of $5 million, only provided 20 per cent of that amount in 1984. Even as of 31 December 1987, the GOL's total contribution was less than 50 per cent of its share capital. Because of this situation, Bomiwood had to purchase second-hand trucks whose depreciation and repair costs were exhorbitantly high. This, in turn, led to the rapid decline of working capital.

Buildings and installations

The damaged motor on the crane which feeds logs into the plant is restricting the size of logs which can be lifted from the stockpile to the feed chain. Consequently, excessive cutting of logs is being carried out in the storage area, leading to increased wastage before the logs enter the plant for processing.

The main saw on Number 1 line is not producing boards of equal thickness. A 3mm difference in the thickness of boards was observed during the plant visit. This is not acceptable for export quality wood and is an inefficient utilisation of valuable hardwood. No quality control procedure appears to be applied after the main sawing operation.

The tongue and groove moulding machine does not produce export quality boards due to the lack of final finishing sanders. This therefore restricts sales of this product to the local market, which is not large enough to fully utilise the capacity of the machine.

Constant breakdowns of the logging trucks, resulting in a utilisation of between 20 and 45 per cent, restricts the supply of logs from the forest to the mill, thus reducing the output of the mill. The trucks were purchased second-hand from Europe but their specifications were not suitable for the African working environment.

The lack of a proper procedure to match all orders to incoming log sizes, so that all logs are efficiently utilised, is leading to excessively high wastage levels at each stage of sawing.

Safety training is deficient in some sections of the factory; serious accidents have occurred in the moulding shop in particular.

Inputs

The major constraint under this heading relates to round logs available at the sawmill. The problems are caused by:

- inadequate logging capacity due to unacceptably high man-time for repairs, and
- inadequate road transport capacity; the average utilisation of the existing fleet of trucks is estimated at about 30 percent.

Cost and price structure

The current costing system does not reflect real costs of production in the processing plant and does not offer incentives for the reduction of wastage.

Markets and competition

The main constraint is that production cannot meet increased sales mainly because of transportation problems on the input side. Another constraint is the limited number of sales outlets on export markets. Finally, storage facilities for finished goods in the harbours are limited.

7.1.2 Rehabilitation requirements

(a) Financial structure

The rehabilitation of Bomiwood would not necessarily require the injection of the GOL's residual equity capital of approximately $3 million, which is in arrears, if the main problem at the factory, the high wastage, is rectified. The GOL's current financial contraints indicate that the company will not, in the foreseeable future, obtain any further funding from the Government. Therefore, privatisation should be seriously considered in the interest of Bomiwood's long-term future.

(b) Management and organisation

The company is not short-staffed at management level. Indeed, two posts - Comptroller and Personnel Manager - could be eliminated. Their duties could easily be performed by other members of the management staff. For instance, the Comptroller's duties could be done by the Chief Accountant and his aides. The duties of the Personnel Manager could be divided between the General Manager and Chief Accountant.

As these positions are quite well paid, salary costs could be reduced considerably without having any serious implications for the running of the company. According to top management, the standard of the person at middle management level could be higher. However, although it is certainly possible to agree with this view, the relatively remote location of the company may be a constraint on the recruitment of well-trained people.

The Board of Directors does not function optimally because the high-level positions of some members prevent them from focusing on such a small company. Because they do not have the time to attend meetings, they send deputies who lack the knowledge of the company's acute problems. It would be an advantage if some members were selected from the private industrial community, with experience in the wood industry in particular.

The existing computer system should be fitted with suitable software in order to be an effective management information system to be utilised for accounting, administration, sales, purchasing and inventory control.

(c) Physical plant

(i) The overall condition of the logging trucks is very poor, with constant breakdowns leading to extremely low utilisation levels, as low as twenty per cent with some vehicles. This has a direct effect on the volume of logs which are supplied to the factory. Within the overall rehabilitation of this factory, the purchase of four new logging trucks designed for African working conditions is an absolute priority.

(ii) The damaged overhead crane transport motor in the log storage area must be replaced to ensure that the maximum sized logs can always be lifted into the sawmill, thereby reducing waste in the storage area caused by unnecessary sawing of logs.

(iii) The Number 1 main saw does not saw boards with a consistent thickness. This deficiency must be corrected by the supply of all necessary spare parts and a better control panel.

(iv) The tongue-and-groove moulding machine requires additional finishing sanders to obtain a smoother finish required for export orders.

(v) A machine for the manufacture of parquet flooring is required in the moulding shop so that a proportion of the factory's waste can be transformed into a high value product, with a very good export potential.

(vi) Spare parts are required for all sawing machines, moulding machines and dryer units to ensure that no major breakdowns occur during the rehabilitation programme.

(d) Inputs

The supply of round timber for the saw mill from the present concessions is expected to meet long term demand, provided sound forestry management practices are maintained.

To ensure an adequate supply of round logs to the saw mill, the capacity of extraction and transport of the logs from the forest area to the saw mill should be improved.

(i) Depending on the technical status of the log extraction equipment, there are two main options: (1) Replace with two new machines which would reduce the downtime to a minimum; (2) Adopt a comprehensive preventive maintenance programme, including major overhaul and replacement of worn parts once a year during the rainy season. If properly implemented, this cheaper alternative should be pursued in preference to the replacement alternative.

With downtime reduced to about half that at present, the capacity is believed to be sufficient and with an acceptable margin.

(ii) Past experience shows clearly that the trucks for log transport are not economical, since they are capable of only about 30 per cent of expected performance. In addition, the cost of repair and maintenance is becoming unacceptably high.

It is recommended that one truck, which is technically in the best condition, be retained, and that the rest are replaced by four new heavy duty log trucks suitable for the frequently very rough roads. The four new trucks should have adequate transport capacity also for accumulation of logs at the mill during the rainy season. The old truck should also be used to increase the capacity temporarily before the rainy season.

These actions will also reduce the cost of round logs at the saw mill lumber yard.

(iii) An alternative to being self-sufficient in round logs is to buy round logs elsewhere, which at present are available in certain quantities at about 40 per cent lower cost than logs from Bomiwood concessions. The balance of the round log requirement should be supplied from the Bomiwood forest concessions. If the raw material supply is arranged along these lines, keeping in mind that sufficient number of logs for full capacity utilisation of the saw mill is provided, the decision regarding the investments in extraction and transport activities will be phased differently in the overall time schedule for rehabilitation.

The purchase of logs elsewhere is also governed by the species available, which will have an influence on the marketing.

(iv) In order to maintain and improve the routine for the system of logging and transport, it is suggested that the Bomiwood harvest of trees is kept more or less at the present level - 17,000/18,00 m^3/year - and that the balance, 5,000 to 4,000 m^3 round logs, is bought, preferably based on contract deliveries at the saw mill site to facilitate proper planning.

(v) In the scaling of the logs at the landings and the sawmill, short lengths of timber are sawn off. This sometimes leads to very high levels of waste, which should be avoided. Plans and procedures to avoid such waste should be incorporated into overall management directives for the reduction of wood waste.

(e) Product range

Expanding the range of products manufactured, for example parquet flooring for the export market, would help to utilise awkward lengths of leftover sawn wood and contribute to the reduction of the excessive rate of wastage in the sawmilling operation.

(f) Marketing

There are no serious constraints affecting marketing at Bomiwood. All processed products are immediately sold locally or in the export markets.

The main constraint affecting sales is the irregular import of raw material which prevents the plant from operating at full capacity and from reaching optimum sales.

Providing that these obstacles on the supply side can be removed, certain improvements on the sales side should be undertaken. The first would be a market survey in Europe. Based on the survey results, appropriate follow-up should be undertaken, such as the contracting of representatives. To improve export sales it is also very important to improve the finish of the processed products.

One requirement, partly out of the company's control, is improved storage facilities in the harbour. Present facilities are not adequate for storing the products during the wet season.

The eroded Liberian economy coupled with previous heavy capital flow from the country is one reason why investor financing of industrial projects is not possible to any larger extent. Substantial foreign participation is the only alternative in the foreseeable future.

7.2 West African Agricultural Corporation (WAAC)

7.2.1 Existing situation

(a) Plant history

In 1967 the West African Investment and Finance Corporation was granted a concession for the development of oil palm, coconut and other perennial agricultural crops, including the processing and exploitation of products from these crops. The terms of the concession involved the formation of a private operating company in 1969 under the name of West African Agricultural Corporation (WAAC). From a 100,000 acre exploration area, 10,000 acres were chosen for exploitation. In 1969 planting commenced on 3,500 acres and a second phase of 500 acres was commenced in 1974. No further planting has been carried out since that date. Since the useful life of oil palms is approximately 25 years, the crop yield will decrease from 1990 when the trees are 20 years old. The actual mill facilities were installed in 1975 by Van de Kerckhoven, Belgium, with a processing capacity of 5 tonnes of fresh fruit, bunches per hour. A second press with a capacity of 10 tonnes of fresh fruit bunches per hour was installed in 1978.

Since the C.D. Sherman family[1/] took over management of the company following the coup in 1980, there has been no routine maintenance of the plantation, with a progressive reduction in the amount of slashing and pruning to the present level of only 9 per cent of the plantation. In 1983, with no qualified engineer at the factory, the Corporation had virtually stopped all operations. From 1980-83 no accounts or auditing had been carried out due to non-payment of auditors' fees.

In 1982, as part of the financial restructuring of the Corporation, the International Trust Company (ITC) received shares having a par value of $2,875,075 in exchange for which all the Corporation's indebtedness to ITC as of 30 June 1982, was waived. The excess of the indebtedness waived over the par value of the shares has been treated as share premium. The shares received by ITC in addition to their existing shareholding were transferred to the Government of Liberia (in lieu of tax liabilities), thus making the Government of Liberia the majority shareholder of the Corporation with 68.89 per cent of the shares. Minority shareholdings were held by W.A.I.F with 13.8 per cent and 122 private shareholders.

In October 1983 the Corporation entered into a ten year management agreement with Socfin Consultant Services (Socfinco) of Belgium, whereby Socfinco assumed full management responsibility of the Corporation and agreed to raise funds of approximately L$500,000 to enable the resumption of full operations. Socfinco were to be paid 50 per cent of the gross profit of WAAC, with a minimum annual payment of 7.5 per cent of net sales revenue.

1/ Mr. Sherman had been President of the West African Investment and Finance Corporation.

By March 1986, Socfinco had become disillusioned with the management agreement due to continuing losses and decided to end its commitment. Since then there has been a succession of different managers, including Mr. W. Cotton (USA) from April to September 1986, and Mr. Moses T. Gkornean, a government appointee, from September 1986 to May 1988, when he was dismissed. From May to August 1988, Mr. Melvin Thornes, Assistant Minister for Technical Services, Ministry of Agriculture, was supervisor of the company, followed briefly by Mr. Sino Lapeleah. From 14 September 1988 to date the manager appointed directly by the Ministry of Agriculture has been Mr. Sensee Sirleaf but this is recognised as a stop-gap measure until a General Manager can be appointed.

The entire plantation and mill was closed down from December 1987 to May 1988; since re-opening it has suffered from a heavy burden of salary arrears and no working capital. Operating costs throughout the year are in excess of sales income at the present levels of plant utilisation. This is mainly caused by lack of fruit entering the plant, although fruit is available on the plantation. This situation will continue, with increasing losses, unless payment of salary arrears is made. If this can be achieved, adequate numbers of fruit pickers would then be attracted, so that the volume of fruit would increase to a level sufficient for continuous operation.

The factory is currently operational only one day every two weeks and is not generating sufficient income to pay salaries and also carry out essential maintenance of the plantation and mill, quite apart from financing any replanting. The company can therefore not survive without capital inputs, further loans, or complete capital restructuring.

(b) Management and organization

West African Agriculture Corporation is a mixed company established in 1969. The present shareholders and their percentage holdings of shares are:

Republic of Liberia	67 percent
West African Investment & Finance (W.A.I.F)	13 percent
Private shareholders (122)	20 percent

The Board of Directors consists of 8 members of which 5 are named by the Liberian Government. The present Board membership is as follows:

Chairman: Mr. S. Gblorzuo Toweh, Minister of Agriculture
Mr. Emanuel O. Akinsulere, Director, Bureau of State Enterprises
Mr. Richard Morris, Managing Director of SEFO
Mrs. Mary Dennis, Senior Economist, Ministry of Planning and Economic Affairs
Mr. Momolu Tamba, Deputy Minister of Justice for Economic Affairs, Ministry of Justice
Mrs. N. Gooding
Mrs. [illegible]ther Richard
Mr. Peter Kiilen, Assistant Minister, Ministry of Agriculture, is project manager of the company and secretary to the Board.

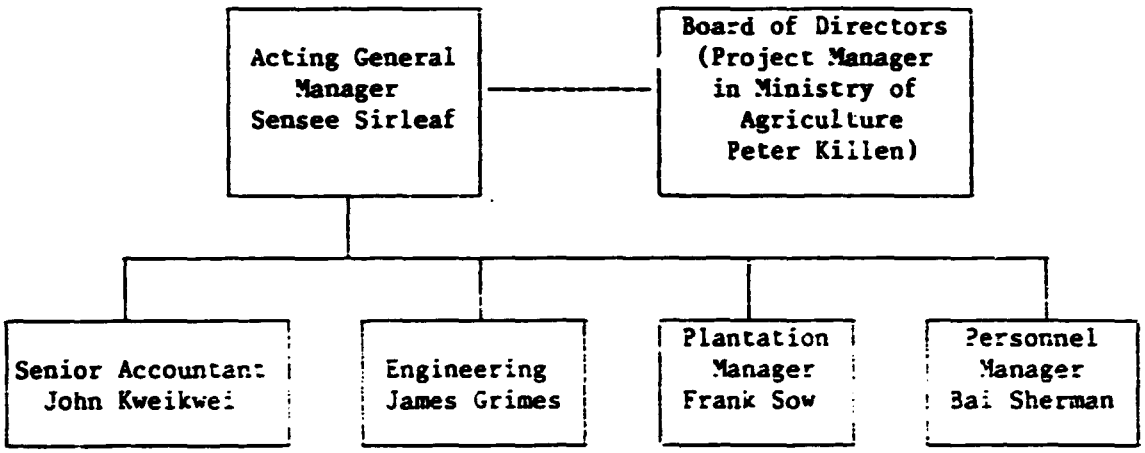
The Acting General Manager does not have a seat on the Board and has not heard of any Board meetings during his four months of employment. This is quite unusual, since, when a General Manager is replaced, it is common

practice that a Board meeting is held and an audit performed. Neither has taken place. One reason is probably the difficulty of gathering such a prominent group of persons together for a meeting.

According to the By-laws of the company, an annual meeting of shareholders should be held on the first Monday in July each year. On the same day, after the close of the shareholder's meetings, a meeting of the Board of Directors should be held. No budget or company plan has been prepared for 1989.

It would be an advantage if the Board would include experienced people from the local business community rather than ministers and other very high-level people. The present Board of Directors does not seem to function the way an efficient Board should function.

Figure 7.2: Management and organisational structure of WAAC



Mr. Sirleaf, the Acting General Manager, is a Liberian citizen with a B.Sc. in Economics from the the University of Liberia. He joined the Ministry of Agriculture in 1981 and has held various positions in WAAC since 1984, before becoming acting General Manager in September 1988. The acting General Manager begins his day at 7:00. Between 7:00 and 8:00 he is engaged in sending workers to the fields and assigning them duties. He follows the workers out to the field and stays there until around 10:00. From 11:00, until lunch time at 12:00, he is back in the office where he has meetings with customers or representatives. From 14:00 to 17:00 he is engaged in routine work in the office and making rounds in the plant.

The Acting General Manager has the formal training for his job but is quite young and inexperienced. To take on the challenge of turning around a company with as many problems as WAAC a very competent and experienced person is needed. It is also necessary to have strong support from an equally competent Board of Directors.

A serious weakness in the organisation is the lack of support from the owners. There does not seem to be any dialogue between the management and the Ministry of Agriculture regarding the running of the company.

Another serious weakness is middle management. None of the managers has the formal qualifications necessary for their jobs. This is particularly serious with respect to engineering and accounting where experience is especially lacking. The organisation also contains several redundant posts such as Personnel Manager and his assistant and Industrial Relations Agent. All three could be done without and their duties divided between the General Manager and the Chief Accountant.

The engineering department urgently needs a competent and experienced engineer to cope with the problems of maintaining the plant. Too often, this service must be bought from outside the company.

The Chief Accountant, apart from accounting, is also responsible for sales and he is clearly unqualified for both duties. An experienced accountant is urgently needed. The sales function can and should be the responsibility of the General Manager until a sales manager can be hired.

Existing laws governing employment prohibit a company from dismissing an employee in the absence of very serious reasons. This makes it particularly difficult to dismiss anyone at middle management level, where the Board of Directors must make the final decision. In all cases, it is necessary to pay compensation whether it is a manager or a worker that has to be dismissed. Funds are not available in the company for such payment; therefore, the company is forced to retain many redundant persons.

Capital and resources are severely mismanaged, mainly because the shareholders are reluctant to supply fresh capital or to insist on competent management.

Between 1980 and the beginning of 1989, six General Managers have tried and failed to get WAAC running efficiently.

(c) Financial structure

WAAC was established as a limited liability corporation on November 27, 1969. The initial authorized share capital was 200,000 shares of $25.00 each, of which 20,000 shares were issued. In July 1982, the Corporation was restructured; as a result, the Government of Liberia holds a considerably larger interest as shown below:

Table 7.2.1: Distribution of share capital in WAAC

	Shares	Paid-up value	Per cent
Government of Liberia	133,550	3,338,750	65.89
W.A.I.F	28,000	700,000	13.81
Private shareholders	41,135	1,028,375	20.30
Total	202,685	5,067,125	100.0

The original feasibility study was not available to the Mission to enable it to obtain information on the proposed capital requirements. In the absence of such information, the Mission had to rely on dues from the financial statements in order to determine the level of capitalization.

Table 7.2.2 shows the financial structure of the company, including assets, liabilities, capital employed, and stockholder's equity.

Table 7.2.2: Balance sheet for years 1977 through 1986
(in Liberian Dollars)

	1977	1979	1980	1981	1983	1984	1985	1986
Current assets	130,510	249,643	295,171	277,577	53,106	219,757	188,372	197,996
Current liabilities	579,358	576,411	59,644	624,879	460,910	704,749	654,445	725,677
Long term debt	1,859,497	2,130,275	2,961,216	3,450,166		136,198	700,501	810,595
Fixed assets	1,592,972	1,523,093	1,572,899	1,432,203	1,181,687	1,254,919	1,186,929	1,112,710
Total assets	3,066,396	3,044,215	2,930,556	2,717,997	2,198,837	2,390,302	2,366,942	2,182,120
Capital employed	1,144,124	1,196,325	1,272,426	1,084,901	773,863	769,927	714,856	585,029
Share capital (stock-holder's equity)	5,000,000	337,529	(624,304)	(1,357,048)	1,737,927	1,685,553	1,712,497	1,456,443

Source: WAAC Financial Statements (which did not include 1979 and 1982).

Notes: Liberian Bank for Development and Investment (LBDI) $ 178,514
Vanderkerckhove (VDK) Loan 164,782
International Trust Company (ITC) 1,516,201

The only depreciation rate known to be used in the accounts at WAAC was given as an estimate of 2 per cent for buildings. Despite the fact that all depreciation rates under the Liberian tax code are fixed, no confirmation of any rate used by WAAC was given to the mission. No comment can therefore be made on this point.

Ratio analysis

Table 7.2.3 presents data on working capital and financial ratios. Based on an analysis of Table 7.2.3, the current ratio (ratio of current assets to current liabilities) is grossly below acceptable standards, averaging 0.32 over the years under review. Working capital (the difference between current assets and current liabilities) showed a fluctuating negative figure. For example, -$448,848, -$347,302 and -$527,711 were respectively recorded as working capital in 1977, 1981 and 1986. The debt ratios (the ratio of total debt to total assets) were respectively 80 percent, 150 per cent and 70 per cent in 1977, 1981 and 1986. The ratio analysis clearly shows that the stockholders, now led by the Government, have provided no working capital to finance current operations. While financial statements for 1987 and 1988 were not available and cannot, therefore, form part of this assessment, management information reveals that since September 1986 there have been arrears on salaries and wages, now amounting to $175,955. This is a clear indication that the company still suffers from an acute shortage of working capital.

Table 7.2.3: Working capital and financial ratios, 1977 through 1986
(in Liberian dollars)

	1977	1978	1980	1981	1983	1984	1985	1986
Working capital	-448,848	-326,768	-300,473	-347,302	-407,80[illegible]	-484,992	-466,073	-527,711
Current ratio	0.22	0 .43	0.50	0.[illegible]4	0.12	0.31	0.29	0.27
Debt ratio (per cent)	80	89	121	150	21	35	57	70

Source: Financial Statements.

Table 7.2.4 shows the income statement over the period 1977 though 1986. The Corporation has been experiencing losses since its inception; for example, losses of $312,999 and $365,848 were recorded in 1977 and 1986 respectively.

Table 7.2.4: Income statement for years 1977 through 1986
(in Liberian dollars)

	1977	1978	1980	1981	1983	1984	1985	1986
Sales	670,597	957,545	1,768,787	818,330	799,569	662,583	616,077	428,189
Operating expenses	983,596	1,209,508	2,680,149	1,581,161	1,969,806	853,957	1,153,736	794,037
Operating loss	312,999	251,963	911,362	762,831	1,170,237	191,374	537,659	365,848

Source: Financial Statements (which did not include 1979 and 1982).

As indicated earlier, the Corporation restructured its capital in 1982. Prior to that date, it settled most of the debt owed to its original creditors - the Liberian Bank for Development and Investment (LBDI), the International Trust Company (ITC) and Vanderkerckhove (VDK) Liberia Ltd. While VDK's debt has been completely paid off, some debts are still ongoing to the former two creditors.

Foreign exchange

Under a former Managing Agent, Socfinco, the company imported spare parts from Belgium. Since 1987, the level of operations has been extremely low. Sales generated can hardly cover the monthly wage bill of $15,000. Because of this, the company does not request a foreign exchange allocation from the National Bank of Liberia. According to the present management, the company lacks funds to buy spare parts locally. However, WAAC will need foreign exchange to purchase spare parts and other replacement items for its mill and other equipment in order to satisfy its rehabilitation requirements. At present, of course, the company earns no foreign exchange to help meet these needs.

Taxes

Currently, WAAC pays only motor vehicle taxes. It pays no corporation taxes because it is incurring losses.

(d) Buildings and installations

The WAAC mill is the oldest in Liberia and was built by Van de Kerckhoven of Belgium in 1975 with an original installed processing capacity of 5 tonnes fresh fruit bunches per hour (FFB/h). Prior to 1975, a small pilot plant with 1 1/2 tonnes FFB/hour had been installed but it was dismantled when the 5 tonne FFB/hour was commissioned. This capacity was increased to a theoretical maximum of 15 tonnes FFB/hr in 1978 with the installation of a second press of 10 tonne FFB/hr capacity. However, due to bottlenecks on the waste fibre conveyors, the two presses, in practice, could never be operated together. The actual maximum theoretical capacity was therefore only increased to 10 tonnes FFB/hr, but even this was never actually achieved. The 5 tonnes press was damaged in 1982 and was dismantled. Due to lack of spare parts it has never been repaired. Therefore, the capability of the existing plant is limited to a theoretical 10 tonnes FFB/hour, unless the 5 tonnes press is repaired and modifications are made to the waste fibre conveyors and thresher unit.

(i) Buildings

The mill building, measuring 1,345m^2, is an L-shaped steel frame structure with roofing and part of the sides clad in standard industrial corrugated sheeting. Much of the sides are unclad for natural ventilation requirements. The building is in good condition and requires no major repairs.

The vehicle maintenance workshop and store building is of concrete block construction with a workshop area of 162 m^2 containing a single vehicle repair pit. The mechanical stores, electrical stores and office occupy an area of 171 m^2. All are in good condition and require little maintenance. The stores are well equipped with shelving for spares, although at the present time there are few important spares in stock.

(ii) Installations

The equipment for processing the fresh fruit bunches into the crude palm oil consists of the following items:

(1) Sterilizer units

Oil palm fresh fruit bunches are delivered by tractor and trailer units from the plantation to the mill. The trailer units are unloaded by hand and transferred to the sterilising containers, called "cages". There are 69 cages, six of which are normally in use in the two Van de Kerchkove steam sterilisation units. Each of the sterilising cages contains between 60 and 80 fresh fruit bunches equivalent to approximately 1-2 tonnes. The buffer stock of fruit in the remaining 63 cages is therefore approximately 77 tonnes depending on the average bunch weight.

From the buffer stock, cages are transferred by fork-lift to trolleys, which are located on the tracks feeding the sterilisation units. Batches of three cages are loaded into each of the sterilisation units for a 45-60 minute steam sterilisation cycle (3 kg steam) depending on the maturity of the bunch. Green bunches are always left in the units for 60 minutes to ensure complete sterilisation. A complete cycle including loading and unloading is approximately 70 minutes.

The sterilizers are in good condition apart from the need for replacement seals and two steam valves (type 1502-NDIO). A rope haulage system was originally installed on the factory for the movement of the loaded trolleys but no steel cable now exists on the factory; therefore, although the winch unit is in working order it cannot be used. Approximately 200 inches of cable is required to bring this unit back into operation. A Caterpiller fork-lift truck is presently being used to push trolleys into the sterilizer units and to withdraw them. This is not the type of work for which a fork-lift truck is designed; rehabilitating the original winch unit would release the fork-lift truck for other work and reduce the possibility of damage to the fork-lift engine. The fork-lift truck was purchased second-hand in 1983 and presently has no starter unit, has a hydraulic leak, and requires new tyres. Other parts are required for its Perkins engine. These are available locally but no funds are available to purchase them.

The sterilisation units are one of the limiting factors in the mill, because of a shortage of cages during the peak production season, and also because of the length of the average cycle time of 70 minutes for normal fruit and 55 minutes for ripe fruit (overall average approximately 63 minutes).

In order to aid digestion, the normal practice is to try to sterilise the fruit one day in advance of threshing, digestion and pressing although this is not always possible. In one 8-hour shift, a total of approximately 45.7 cages (55.7 tonnes) can be processed, providing the boiler is started prior to the normal shift starting time. The maximum sterilisation capacity in the peak season, when operating on three shifts, is therefore 137 cages (167.1 tonnes or 6.96 tonnes per hour). During the low season, however, the actual operating time can be extended to an effective nine hours per day, without overtime working, by rotating personnel though the lunch break. This provides a maximum sterilisation

capacity on a single shift of approximately 51 cages (62.2 tonnes), which is then sufficient to maintain the thresher unit at its maximum capacity of 7.3 tonnes per hour for 8 operational hours. The buffer stock of 63 cages is therefore adequate for the low season, but during the high season fruit has to be dumped on the ground due to insufficient cages, resulting in double-handling of the fruit and increased labour costs. A more efficient handling method for the incoming fruit would be for the tractors to dump their load from a ramp directly into the cages or into a storage bin fitted with a feed conveyor.

During the peak season it is necessary to operate the plant for 24 hours per day (3 x 8-hour shifts). At this point the sterilisation units become the limiting factor on the plant, since plant capacity is restricted to 7 tonnes FFB per hour, whereas on single-shift and double-shift operations the thresher unit and digester are the limiting factors.

Consideration should be given to the practice of sterilising the fruit the day prior to processing. This is primarily done to aid digestion and increase output, but during this 24-hour period there must be some danger of re-contamination of the fruit. Testing of the fruit for correct sterilisation should be carried out initially to determine if the fruit remains sterile.

(2) Overhead crane

This 5 tonne crane, type Verlinde, France, is used to lift the sterilised cages onto the top of the thresher unit. The normal procedure is to lift a total of six cages onto the top of the thresher, which are then emptied by a team of four men who feed the fruit into the thresher. The crane is operational but a number of electrical spares such as timers and contactors are required to avoid future breakdowns. This method of handling is highly labour-intensive; a conveyor system would be a far more efficient method of feeding the thresher unit.

(3) Thresher

The thresher unit removes the fruit from the bunches by means of a rotating cylindrical-shaped unit consisting of numerous cast iron threshing bars. The machine can presently process two cages in 20-30 minutes with a team of four men feeding the thresher. From the top of the machine with a maximum of 80 bunches per cage, and an average bunch weight of 15.3 kg[1/] this equates to a maximum processing capacity of approximately 7.3 tonnes per hour (i.e. six cages x 1-2 tonnes) under present conditions. The thresher was originally fitted with a discharge conveyor for the empty bunches, which deposited them into a storage bin for disposal. This was removed by the Belgian consultants, who had apparently planned to install a longer conveyor to discharge the waste into the neighbouring river. Apart from being environmentally irresponsible, removal of the original conveyor at such an early stage has meant that two men are now employed on a full time basis removing waste from the thresher. A new conveyor feeding a storage bin should be installed to remove this waste and eliminate the labour requirement.

1/ Source: 1988 actual bunch weight data

(4) Digesters

From the thresher, the fruit passes to a Van de Kerchehove bucket elevator (type 72016, 1973) and is then fed to a horizontal screw conveyor situated above the two digesters for the 5 tonne press and the 10 tonne press. Only the 2.900L digester for the 10 tonne press (type VDK-DP-10-10/OMS 4021814-1978) is currently utilised, although the 2.000L digester (type Olier) for the 5 tonne press is still in working order.

Both digesters require up to 4 bar of steam for maximum efficiency but this is sometimes not available as the fuel feed rate to the boiler is sometimes too low. Under present conditions, the 2.900L digester processes the equivalent of two cages FFB in approximately twenty minutes (6 cages per hour or 7.3 tonnes per hour) if fruit sterilisation has been carried out the previous day. This is reduced to an equivalent of 4 cages per hour or 4.9 tonnes per hour if sterilisation has been carried out the same day. Unfortunately, no records have been kept on the actual average weight of fruit per bunch; therefore, the accurate tonnage of fruit entering the digester could not be determined.

The drawing of the 2.900L digester shows that six sets of rotating arms should be installed in the digester to circulate the cooking fruit. However, the top set of arms was never installed in the machine and all the remaining five sets of arms were at one stage broken. The bottom sets of four arms have been repaired but the fifth set (top) is still missing from the machine. The result is that over one-third of the height of the digester column is not being circulated, and this will have the effect of lengthening the digestion period. Any rehabilitation programme must include the repair of this machine. In addition, the temperature and pressure gauges on this machine are inoperative and must be replaced. The operator currently has no knowledge of any variation in temperature or pressure; therefore, no accurate control is possible.

(5) Presses

The original 5 tonne FFB per hour Olier press, type 5-SP-2VB, is still dismantled following its breakdown in 1982. Approximately US $50,000 is required for all the necessary spare parts and this has never been available to the company.

The 10 tonne press (type VDK) is operational but the angers are worn and no stainless steel welding rods are available to carry out the repair work. Consequently, the extraction rate has fallen to 17-18 per cent, whereas with well-fitting angers, the extraction rate can be as high as 21 per cent. Since this is a significant reduction in yield, the refurbishment of this machine must be a priority as part of any rehabiiitation programme. Although the machine has a theoretical maximum capacity of 10 tonnes FFB per hour, this cannot in practice be achieved due to the constraints outlined earlier - the maximum possible capacity is approximately 7.3 tonnes FFB per hour on single-shift and double shift working and 7 tonnes FFB per hour on three-shift working. Apart from the wearing parts in the machine, the press requires a new recorder to record the hydraulic oil pressure throughout a working shift. The operator has a pressure gauge which indicates 50 bar for normal operations, but no record is kept, which could assist production and maintenance staff in assessing the efficiency of the machine.

Waste cakes from the press are discharged by a horizontal screw conveyor onto a 28 degree inclined screw conveyor which, in turn, feeds the cakes via an overhead horizontal screw conveyor to the fibre and nut separator. The inclined conveyor is a source of constant problems as, even with one press, it tends to become overloaded. When the 5 tonne press was also operational, it proved to be impossible to operate the presses simultaneously, partially because of the cake disposal problem. Additional facilities for cake transport may have to be provided if the present conveyors cannot be speeded up.

(6) Fibre and nut separator

This unit consists of a rotating drum unit with a blower unit at floor level and is fed by the overhead screw conveyor. Fibre is blown to the boiler and the nuts are lifted into a 24 tonne storage bin by an inclined bucket conveyor. The storage bin is in reasonable condition but requires some replacement reinforcing bars inside the bin. No problems are apparent with the separator.

(7) Cracker-sorter

From the nut storage bin a bucket elevator lifts the nuts to a double cracker-sorter unit. From the drum separator, large nuts are recycled back to the cracker and the cracked nuts are fed into a 24 tonne storage bin. Cracked kernel nuts are unloaded via an Avery weighscale and are then bagged for sale to the customer. The shells from the cracker are fed to the boiler unit. It should be noted that currently this section is not being utilised as there are apparently no customers for the cracked kernel nuts. Everything is therefore being burnt in the boiler.

(8) Oil clarification

The oil from the press is passed over a vibrating strainer into a small ground collection tank (1m x 2m) from where it is pumped into one of the three clarification tanks, each having a capacity of approximately 80 drums (16,000l). Clarification is simply by water mixing and setting. The clarified oil is discharged either directly to the customer or into one of the two large oil storage tanks, one of 150 tonnes capacity (750 drums x 200 l), and one of 450 tonnes capacity. Industrial oil, which contains some water, is taken from the bottom of the tanks and is sold for soap manufacture. Facilities are also available for bleaching, if this is required by the customer, but they are rarely utilised at the present time.

(9) Boiler system

The boiler, type Babcock Atlantique (1973), exploded in 1986 due to operational error, resulting in one side of the boiler being damaged. Some repairs have been carried out and although the boiler is operational, some of the steam pipes are missing, the level gauge is broken, one of the boiler pumps (type KSB) requires replacement, refractory cement is required for internal repairs, and insulation is also required. The boiler is nearing the end of its useful life and should be replaced as part of any rehabilitation programme. The wood feeding arrangements at times appear slack as the operators allow steam pressure to fall on occasions, solely because insufficient wood has been

fed into the boiler. It normally operates at 18-20 bar pressure but quite regularly falls to less than 17 bar, which is the minimum operating pressure for the steam turbine. At this point the turbine has to be shut off and the steam supply to the digesters and sterilisers is then halted, bringing the entire process to a standstill. Such problems can be totally eliminated by closer supervision of personnel.

On the associated superheater, the 0-300 degree centigrade temperature gauge is not working and should be replaced. Four meters of the boiler chimney collapsed approximately one year ago and the rest of the chimney can be assumed to be in poor condition with heavy corrosion. A new chimney must therefore be installed for the new boiler.

(10) Water softener unit

This is not operational and the water is simply being filtered through charcoal. When a new boiler is installed, a water treatment unit should also be installed to avoid any potential problem with the boiler tubes.

(11) Ancillary equipment

One Caterpiller generating set 60KVA
One Caterpiller generating set 69KVA
One Caterpiller generating set 105 KVA.

The 50 KVA and 69 KVA sets are in working order but the 105 KVA unit has no motor and requires rewindings. Within the factory maintenance shop are:

One pedestal drill
One Peddinghaus steel cutter 5RP/13
One sheet steel bending machine
One progress Lathe type N425
One double grinder unit

To enable the factory to carry out more of its own repairs, a shaper and a milling machine are required together with a full range of hand tools and cutting tools for the existing lathe. These items should be provided under any rehabilitation scheme.

Within the factory vehicle repair shops are:

- One Alister generator, which has been out of use since 1983 and is no longer required;
- One Atlas Copco compressor (10 kg/cm^2), which is presently not operational as the motor is being rewound;
- One two-cylinder air compressor (type unknown) which is operational

Six personnel work in the vehicle workshop but very few tools are available for them. At a minimum, two complete sets of hand-tools are required.
The mill has the following mobile plant:

(a) Two Deutz tractors type D6202 (both non-operational)
(b) One Deutz tractor type D6507 (operational)
(c) One Deutz tractor type D5072 (non-operational)
(d) One Caterpillar fork-lift truck

(e) Two Toyota jeeps (1339-BC)
(f) One 8 tonne Toyota truck, type 430 BT (for transportation of workers)

The three non-operational tractors all require tyres. Two other tractors are on site but are scrap. For the mill to try to operate with only one tractor is clearly impossible and the required spares for the other three tractors should be purchased as part of any rehabilitation programme.

Both in the production and maintenance sections, there appears to be a number of able and experienced personnel but because of lack of spare parts, their work has been limited to minor routine maintenance, utilising what local materials become available. For the major maintenance jobs, which invariably require imported spare parts, no funds have been available for many years and it is an essential part of any rehabilitation programme that adequate spare parts are provided within the framework of the programme.

Based on the following estimate of inputs to the mill over the next 15 years, the plant operational days per year with a rated capacity of 7.3 tonnes FFB/hour at single and double shift operation and 7 tonnes FFB/hour at 97.5 per cent efficiency shift operation will be:

Table 7.2.5: Estimated overall supply of FFB, 1990-2005

Year	Tonnes FFB	Plus Outgrowers Tonnes FFB	Total operational Tonnes FFB	Total operational Shift (8 hour) per year
1990	9,600	-	9,600	188
1991	9,600	1,500	11,100	217
1992	9,600	1,500	11,100	217
1993	9,600	1,500	11,100	217
1994	10,200	1,500	11,700	228
1995	11,500	1,500	13,000	254
1996	12,900	1,500	14,400	281
1997	15,600	1,500	17,100	334
1998	19,800	1,500	21,300	416
1999	23,600	1,500	25,100	514*
2000	32,700	1,500	34,200	700*
2001	36,200	1,500	37,700	772*
2002	39,000	1,500	40,500	830*
2003	40,900	1,500	42,400	869*
2004	41,500	1,500	43,000	881*
2005	42,600	1,500	44,100	903*

* Permanent three shift operation, except for low season.

On the above estimates additional production facilities would be required from approximately 1999 to cope with the peak season.

(e) Inputs

The plantation

Palm oil fruit is supplied to the processing plant from the WAAC concession area. The existing plantations are located northwest, west and southwest of the WAAC processing plant, with an average transport distance of about 7 km. Areas not yet utilized are mainly south and to some extent north of the plant, with a similar average transport distance. The total concession area is 10,000 acres, equivalent to 4,550 hectares.

The Wangekor plantations were established in 1969 when 375.1 hectares were planted with palm oil trees. A further 1057.3 hectares were turned into palm oil plantations in 1970 and an additional 168.7 hectares in 1971. No more planting has been carried out since then. Hence, the total area of Wangekor plantations covers 1,600 hectares; 2730 hectares (6,000 acres) are still not yet developed. Although WAAC has the legal rights to utilize this land for future plantations, problems have arisen as a result of the settlement in this area of a large number, reportedly a few hundred, farming families. They have now lived there for a period of 10-15 years or more, and cannot simply be thrown out without being offered alternative lands.

In 1984, during the Socfinco period, a nearby farm comprising 8 hectares of palm oil plantations was leased. This lease contract terminates in 1994. All trees in the Wangekor plantations are between 18 and 20 years old, giving them another 5-7 years of economic production. The plantations have been mismanaged for many years, with minimum slashing or clearing of the vegetation under the palm oil trees, no pruning, no application of fertilizer, and so on. In summary, the plantations are not in a good state of production at present, although some slashing and pruning of the trees started in 1988.

In November 1988, 16 hectares received potash fertilizer at a rate of about 170 kg per hectare, or a total of less than three tonnes. In fact, since no soil samples have been analysed since the 1970s and no leaf analysis has taken place since 1985, very little is known about the deficiencies of plant nutrients and hence the need for fertilization. However, according to the Plantation Manager, symptoms of potassium and magnesium deficiency have been noticed on the trees in a few locations.

Management of plantations

There has been no proper management of the plantations since 1980. An attempt was made in 1983 to improve the situation by hiring a Belgium company, Socfinco, to assume responsibility for the operation of WAAC. Their contribution to improving the plantations proved unsuccessful and the Socfinco management terminated in June 1986.

The present management, appointed in September 1988, is the third in succession since Socfinco left. The frequent changes of management, and apparent lack of no long-term plans or directives from the Ministry of Agriculture or any other authority, have significantly contributed to the present poor state of the plantation. In addition, the pre-1980 owners of the plantations obviously lacked the ability to plan for long-term supply of palm oil fruit to the processing plant since no additional plantations were established in the mid and late 1970s.

In December 1987, the entire operation was closed down and the plantation activities were not resumed until May 1988. The operation has now been subordinated directly under the Ministry of Agriculture.

The existing plantation is subdivided into ten blocks to facilitate proper and timely planning of all activities. Table 7.2.6 shows the number of palm oil trees and the size of the blocks, all of which were to be slashed in 1988 according to the plantation maintenance programme.

Table 7.2.6: Plantation maintenance programme, 1988

Manual slashing, one round

Block number	Palm trees numbers	Hectares	Cost per tree	L$ Total
1	23,787	169	0.05	1,189.35
2	28,744	205	0.05	1,437.20
3	26,134	186	0.05	1,306.70
4	29,981	214	0.05	1,499.05
5	12,110	86	0.05	605.50
6	33,362	238	0.05	1,668.70
7	19,334	138	0.05	966.70
8	42,102	300	0.05	2,105.10
9	15,271	109	0.05	763.55
10	4,470	32	0.05	223.50
	235,295	1,677		11,764.75

Source: WAAC, Plantation Management.

It should be noted that the total hectarage of the plantations in Table 7.2.6 exceeds previously quoted figures by 77 hectares.

In 1988 only Block Nos. 1,2,3,6 and 8, or a total of 1,098 hectares, were actually included in the management. This was reportedly due to lack of manpower, resulting from the the lack of funds to pay them. In addition, although this area was harvested, only part of it was slashed and pruned.

Table 7.2.7 shows the number of harvesters engaged in 1988 and the quantity of fresh fruit bunches (FFB) harvested. The average performance of the harvesters is calculated on the basis of 26 working days per month and assumes that the average weight of FFB is 12 kg which is rather low.

Table 7.2.7: Harvested production 1988

Month	Harvested number	FFB Kg.	Harvested Kg/day	Performance FFB/day
May	39	387,614	382	31.9
June	33	475,467	504	46.2
July	51	207,737	157	13.0
August	36	61,822	66	5.5
September	34	39,096	44	3.7
October	33	67,683	79	6.6
November	35	146,260	161	13.4
December	28	95,985	132	11.0
Total		1,481,664		

Source: Compiled from WAAC data.

Table 7.2.8: Harvested production 1985

Month	Harvested number	FFB Kg.	Harvested Kg/day	Performance FFB/day
January	59	325,355	212	17.6
February	68	288,825	163	13.6
March	64	629,620	378	31.5
April	58	800,272	531	44.2
May	59	1,103,121	719	59.9
June	62	854,016	530	44.1
July	57	190,400	128	10.7
August	58	106,560	71	5.9
September	55	221,681	155	12.9
October	50	309,540	238	19.8
November	49	452,480	355	29.6
December	52	512,000	379	31.6
Total		5,743,920		

Source: Compiled from WAAC data.

According to WAAC management, the harvesters collect 60 FFB, or even up to 80 FFB per day. These figures are also used for calculation purposes. The reality, as seen in Table 7.2.7, is that the average worker never achieved more than 46 FFB per day and, in six months out of eight, the productivity was at most only 22 per cent of the expected lower figure, 60 FFB per day.

Table 7.2.8 illustrates the results achieved in 1985. Average harvesting performance during that year is also far from satisfactory, although slightly better than in 1988.

The present poor condition of the plantations results in a low yield estimated at 1,270 kg per hectare for the 8 months in 1988 when the trees were harvested. This may be compared with the same period in 1985 when the plantation output was on average 2,312 kg per hectare. Assuming that the relation between the yield of FFB from January to April and from May to December in 1985 is similar to what should have been the case in 1988, the total average yield in 1988 is estimated at 2,300 kg per hectare as compared with 3,590 kg per hectare in 1985. These figures probably reflect the quantities harvested rather than the actual yield of FFB.

This poor performance can be explained, to a large extent, by lack of any plan of incentives to the workers. The harvesters are paid 6 cents per FFB during the (peak) season, March through August, when the harvester, with one helper, is expected to harvest 80 FFB per day. The payment has to be shared between the two. If the weather conditions have been dry, resulting in lower yield from the trees, the payment per FFB may be increased to 10 cents per FFB. During the rest of the year, September though December, the harvest workers are paid 12 cents per FFB, but without the assistance of a helper to collect the FFB in heaps for subsequent transport to the ore mill. The system and level of payment has not changed since 1985. In addition, the workers are not paid regularly on a monthly basis. They have to wait, sometimes 2-3 months or more for payment due to lack of funds. Considering the performance indicated in Tables 7.2.7 and 7.2.8, the earnings of the workers are painfully low. This situation, combined with an apparent lack of confidence in WAAC and its management, has resulted in low morale.

Manual slashing between the rows of trees is a slow process and is not done over large areas of the plantation. Of WAAC's two tractor-mounted slashers, one is currently totally dismantled, and the other lacks the rear supporting wheels necessary to adjust the height at which to slash the growth between the trees.

The capacity of each of these machines is estimated at 2-4 hectares per day, depending on conditions, and their use would greatly improve the up-keep of the plantations and facilitate assignment of additional workers to pruning. However, this does not appear to have been the case in 1988.

Transport

The harvested FFB are collected by means of tractor-drawn trailers. Although WAAC has six Deutz tractors, only one is operational. Two are dismantled to a very large degree; the remaining three tractors need two or more new tyres each and also some repair work.

One trailer, capable of carrying about 2 tonnes, is presently used for transporting FFB from the plantation to the oil mill. Two more are in a bad state of repair and without tyres. The bigger of these could probably load 5 tonnes of FFB. Hence, the currently available transport capacity is estimated at about 1 tonne per hour considering an average distance of 7 km, the road condition, and time required for manual loading and unloading. If three tractor/trailer units were repaired, the average daily transport capacity, under present conditions, is estimated at about 30 tonnes with variations plus/minus about 10 tonnes.

It is concluded that the performance and capacity of the field organisation for slashing, processing, harvesting and so on, and transport of the FFB to the oil mill is far from sufficient.

There is a need for re-organization of management and procedures, programmes and routines, including activities which have previously not been performed, namely preparation and planting of new plantations which also calls for re-vitalization of the nursery.

Assessment of overall production

If all plantations are properly managed, including but not limited to slashing, pruning, and application of fertilizer as determined from soil and/or plant analyses, an average annual crop yield on the order of 6 tonnes per hectare may be expected the following year. Later, towards the mid-1990s, the expected total production is likely to drop gradually as the trees become totally uneconomical.

With this scenario, and assuming a practical daily capacity of a rehabilitated WAAC oil mill of 100 tonnes per day operating on one shift, the raw material available from the Wangekor plantation is sufficient for 3 to 4 months running of the plant.

Establishment of new plantations is urgent and crucial for the continuity of the enterprise. From a practical point of view, it is advantageous to split up the preparation and planting in 540 hectare blocks, one per year, during five consecutive years. By 1995 the 2,700 hectares currently not in use will be planted and a programme for replanting the existing old plantations can commence. By the end of the 1990s when the first new plantations are beginning to yield, the critical situation relating to raw material supply to the oil mill will be tapering off.

Future development is illustrated in Table 7.2.9. This is calculated on the assumption that the above-mentioned planting programme is adopted and that the annual yield from different plantations are approximately as follows:

Assumed yields per hectare in tonnes

	Old plantations		New plantations	
1990-93	6	Year (from	4	4
1994-98	5	planting)	5	6
			6	7
			7	8
			8	10

Table 7.2.9: Estimated total production of FFB, 1990-2005

Year	Plantation, h.a. Old	Plantation, h.a. New	Production, tonnes Old trees	Production, tonnes New trees	Production, tonnes Total
1990	1,600	540	9,600	-	9,600
1991	1,600	1,080	9,600	-	9,600
1992	1,600	1,620	9,600	-	9,600
1993	1,600	2,160	9,600	-	9,600
1994	1,600	2,700	8,000	2,200	10,200
1995	1,225	3,075	6,100	5,400	11,500
1996	735	3,565	3,700	9,200	12,900
1997	422	3,878	2,100	13,500	15,600
1998	186	4,112	900	18,900	19,800
1999	-	4,298	-	23,600	23,600
2000	-	4,298	-	28,500	28,500
2001	-	4,298	-	31,700	32,700
2002	-	4,298	-	36,200	36,200
2003	-	4,298	-	39,000	39,000
2004	-	4,298	-	40,900	40,900
2005	-	4,298	-	41,500	41,500

The above production estimates may be conservative, but are to a large extent related to the management level achieved in the future. Total production is expected to increase from the mid-1990s and reach full production after the year 2000, when the whole Wangekor Plantation carries new palm oil trees in production.

The figures are indicative rather than absolute and are calculated for the purpose of assessing the rehabilitation needs of the oil mill. It is evident from Table 7.2.9 that the oil mill will be under-utilized during the major part of the 1990s. This suggests that other sources of palm oil fruits should be identified and utilized as much as possible.

Other sources of oil palm fruits

According to studies relating to a loan application made to LBDI by Socfinco in May 1984, the total area of smallholder palm oil plantations in Grand Cape Mount County is 912 acres, or 400 hectares. Discussions with WAAC management have confirmed that production from the majority, if not all, of the smallholdings could be available to a rehabilitated WAAC enterprise. The smallholder palm oil plantations in the area were reportedly established in the mid 1970s, which means that they will be productive for a number of years into the 21st century.

The plant material to many of these smallholdings was supplied from the Wangekore Plantation. It is expected that the management of the smallholder plantations will not be very effective with detrimental effects on the level of production. Improved management could be attained through extension services from the plantation management of a rehabilitated WAAC. The payment to the smallholders should be based on actual production costs, allowing a reasonable margin for profit, which would constitute an incentive to produce increasing quantities of FFB. This is an important consideration, especially in the medium-term perspective from about 1992-93 onward.

Assuming that 75 per cent of the smallholder plantations respond positively to selling their palm oil fruits to WAAC, around 1,500 tonnes of FFB per year could be procured from these out-growers. This strengthening of the raw material base will not have a dramatic effect on the economy of WAAC, but nevertheless will contribute to a slightly better situation.

Depending on the response from the smallholder sector in the area, efforts should be made to persuade the smallholders to establish new plantations at a very early date. A concept would then emerge with a central palm oil processing mill, a nucleus estate producing the bulk of the inputs, and a sizeable hectarage of out-growers. This concept has many advantages, including benefits from an investment point of view. One prerequisite, however, is that the future rehabilitated WAAC acquire the reputation of honouring all agreements and paying promptly for services and supplies. Assistance must also be given so that WAAC has a long-term strategy of development providing sufficient guarantees for the future.

(f) Product range

WAAC produces three types of palm oil: premium palm oil, industrial oil; and (since 1985) bleached oil. WAAC's records on the distribution of total palm oil output between the three types are very poor. Even after consulting Ministry of Agriculture data, the picture remains incomplete. Table 7.2.10 presents data for the years 1984 through 1988 based on the available information that was available.

Table 7.2.10: Range of products manufactured and output, 1984-1988

Output[a/] \ Years	1984	1985	1986	1987	1988
Total, as tonnes of palm oil extracted	1324.2	1078.8[b/]	944.9	409.1	239.6
of which:					
- Premium palm oil	1271.0	n.a	n.a.	395.0	230.0
- Industrial oil	53.2	n.a	n.a	12.0	9.6
- Bleached oil	-	-	20	2.1[c/]	-

Source: UNIDO compilation from WAAC experts of activity.

N.B: a/ Not yet clarified whether figures represent the real output of the mill or the sales.

b/ Of which, 448.3 tonnes were expected in USA. The only other exports were 677.4 tonnes palm oil shipped to USA in 1980.

c/ Estimated.

The processing of palm fruits also produces palm kernels as a by-product (around 3-5 per cent on average of the FFB input). As these are not sold by WAAC, they do not form part of its product range. Instead, they are burned, despite their high protein value and potential high market value.

(g) Plant performance/costs and price structure

Performance of the crushing mill

Built in 1972, the crushing mill has an installed crushing capacity of 15 tonnes of FFB per hour, equivalent to 55.6 per cent of total Liberian milling capacity and 94 per cent of total palm oil capacity in the public sector mills. The mill has never been utilized at full capacity.

In spite of several shut down periods that occurred since 1984, equipment maintenance and servicing has been performed regularly. In its present condition, the mill is estimated to be able to easily produce 1,500 to 2,000 tonnes of crude oil per year. However, as Table 7.2.10 shows, only 409 tonnes of oil were extracted in 1987, and 240 tonnes in 1988. The conversion rate of palm fruits to crude oil varied between 14 per cent and 18 per cent during the years 1985 to 1988.

According to the Ministry of Agriculture, conversion rates were higher in the other state-owned mills, with Butaw attaining 22 per cent and Decoris 20 per cent in 1987/1988.

The five tons/shift bleaching unit which was installed in 1985 in order to extend WAAC's product range has remained mostly shut down since then. It has produced less than 25 tonnes of bleached oil since its start up; the company points to high overheads of the bleaching operation and the product's low selling price on the local market as explanation for this failure.

Cost and price structure

The Ministry of Agriculture fixes, through circulars, the seasonal prices for palm oil products (corresponding to low and high harvesting seasons of palm fruits). The following price levels were set in 1987-1988.

Table 7.2.11: Retail market price of palm oils
($/tonne)

Period	Type of palm oils		
	Premium grade	Industry grade	Bleached
1987 - year average	663.00	469.60	635.36
1988 - low season	540.69	475.00	n.a.
- high season	925.00	600.00	n.a.

Source: Ministry of Agriculture, Division of Technical Services.

The production cost of palm oil extracted by WAAC exceeds the local market price, and sales have been made at a loss, at least since 1980/81.

The estimation of production costs was possible only for 1985, the year when all cost information was available and when output reached 1078.5 tonnes of crude palm oil. This estimation of costs and their breakdown by major factors is, however, of some relevance in 1989. What has happened in the meantime is that the whole WAAC operation has worsened and outputs have decreased.

Table 7.2.12: Estimation of production costs of crude palm oil, 1985

		L$/t Crude oil	Per cent of total
Operating costs		146.48	16.3
of which:	plantation upkeeping	56.38	6.3
	harvesting of fruits	0.69	6.7
	transport and loading	29.40	3.3
Cost of milling operation		140.40	15.6
Management and administration cost		130.97	14.5
Running expenses		119.82	13.3
Depreciation		188.52	20.9
	Total	900.53	100.0

Source: Auditor's report, 1985.

It is clear that the company can hardly cover its operating and milling costs by sales of crude palm oil, and that it is not in a position to generate its working capital or to fulfil its financial obligations.

WAAC's operation can survive only if the production costs of crude oils become competitive on the local market, where the competition is already very strong, due to:

- a low level of consumption due to decreasing purchasing power in Liberia;
- increased supplies of palm oil for human consumption from smallholders, at low prices (L$200 to L$ 360 per tonne);
- competition from the other major local producers who cannot export their products at current depressed prices on the international market, and therefore increase their domestic sales;
- competition from imports of palm oil from Ivory Coast and Guinea;
- imports of cheap refined palm oil into Liberia since 1985.

Import dependence

Import dependence is total for spare parts, small tools, chemicals and fertilizers.

Protection

As regards imports, no duties are levied on either spare parts, tools, chemicals or fertilizers. Refined palm oil is imported freely, without any duties.

Markets and competitors

The total market for palm oil in Liberia has been impossible to estimate since the Ministry of Agriculture does not have any reliable statistics.

In 1984 the Liberian Bank for Development and Investment estimated the total market to be about 25,000 - 30,000 tonnes per year. With a local production of about 20,000 tonnes per year, there is a shortage of about 5,000 tonnes which has to be covered by imports. Of the local production, 15,000 tonnes per year are estimated to be produced by traditional methods in the villages and the remaining 5,000 tonnes are divided between three main producers: LIBINC, BUTAW and WAAC. Under normal production conditions, WAAC is estimated to produce about 20 per cent of the total industrial production and about 5 per cent of the total production in the country.

WACC's location on the newly-constructed highway between Monrovia and the border with Sierra Leone, about 110 km from Monrovia, is a great advantage for domestic sales. The main local market in Monrovia and WAAC's location puts it in a very favourable position compared with its competitors, which are mostly located in isolated geographical locations in the southern part of the country. This has led the other companies to orient their sales more to export markets; therefore, they do not present a serious threat to WAAC in the local market. (Although the competitors are in a better position regarding raw material supplies, their processing equipment is substandard and, like WAAC, they are in urgent need of rehabilitation.)

There is quite a substantial market for refined palm oil but no local production, so at present all refined oil is imported. WAAC could be a possible location for a refinery, preferably with the capacity to refine the country's total needs for refined oil. One refinery would be sufficient to refine oil produced by WAAC and its two competitors.

WAAC does not have any distribution system of its own; customers make their purchases at the factory gate. There are no sales outlets in Monrovia or any other parts of the country.

The market is very much a sellers market and is likely to remain so for the foreseeable future. This means that there is no immediate need for marketing efforts. However, this situation will change as soon as rehabilitation has taken place.

Some small quantities of oil were exported to Holland a few years ago. However, at present, no exports are contemplated as long as local demand remains unsatisfied.

(i) Constraints

Management and organisation

The company suffers from unqualified management which, together with under-capitalization, has created a very serious situation. Middle management personnel are inexperienced and not qualified for their jobs. This is especially true with respect to the Engineer and Chief Accountant.

The acting General Manager has the formal education and training, but does not possess the strong leadership qualities required under present circumstances.

Middle management also includes posts that are clearly unnecessary in such a small company, including the Personnel Manager, his assistant and the Industrial Relations Agent.

Financial structure

The major constraint under this heading is the total lack of working capital. The GOL, which has 66 per cent of the shares, has failed to provide the needed working capital because of its own financial difficulties.

Buildings and installations

(1) The sterilisation units have a maximum hourly capacity of 7 tonnes FFB and there are insufficient sterilisation cages to cope with the three-shift operations during the peak season.

(2) The thresher unit and digester units can only cope with an hourly capacity of 7.3 tonnes FFB, whereas the press was installed for 10 tonnes FFB per hour.

(3) The thresher unit has no discharge conveyor for empty bunches and no storage container for this waste material, thereby increasing labour costs.

(4) The crane transfer of fruit to the top of the thresher is labour intensive and slow. A simpler and more efficient method would be by conveyor.

(5) The broken digester arms makes the digester less efficient and lengthens digestion time, reducing throughput to the press.

(6) Lack of spare angers for the press or stainless steel welding rods for the repair of existing angers led to inefficient pressing with low extraction rates of 17-18 per cent, against a possible 21 per cent extraction rate. This equates to a substantial loss in revenue.

(7) The waste cake conveyor constantly blocks up as it is too small for the 10 tonne press, thereby increasing labour costs.

(8) The boiler has been damaged and is nearing the end of its useful life.

(9) Lack of adequate maintenance equipment and tools reduces the effective work that the maintenance staff can undertake.

(10) Lack of serviceable tractors reduces the amount of fresh fruit brought into the factory.

(11) A complete lack of spare parts means that important maintenance work cannot be carried out.

(12) Lack of proper management and co-ordination between departments has led to the inefficient use of available manpower.

Product range

The limitation of the range of products to only industrial and premium oil reduces substantially the penetration of the local market. Drum packaging of oils limits the end-users to wholesalers and small to medium-sized soap manufacturers.

Plant performance/costs and pricing structure

- Unavailability of sufficient raw materials (FFB) for the oil mill;
- Lack of motivation and concern about productivity on the part of the workers;
- Lack of qualified accountancy personnel;
- High share of staff costs and of running expenses in total reduction costs.

Inputs

(i) Mismanagement of all plantations over a long period of time has reduced substantially the productivity of the plantations. This mismanagement includes neglecting to plant new palm oil trees or to maintain old plantations, now generally 18 to 20 years old.

(ii) Insufficient capacity for planning, execution and supervision of plantation maintenance.

Marketing

The present local and export markets can absorb all of WAAC's production. The main constraints regarding palm oil sales are internal - the problems on the production side and the insufficient supply of raw materials.

7.2.2 Financial structure

The company suffers from a severe shortage of working capital which must be rectified. The best solution is probably privatization since the major shareholder, the Government of Liberia, has severe financial difficulties of its own which would constrain it from injecting any capital into the enterprise.

(a) Management and organisation

The organisation shows serious weaknesses on all levels of management both with regard to formal training and experience. The Acting General Manager has an adequate formal education but lacks experience running a company such as WAAC. This is especially pronounced in the company's present difficulties, and made even more serious by an absence of support on the part of the owners. Moreover, the management has very little or no contact with the Board of Directors.

Middle management needs to be restructured and improved. Three positions are redundant at this level and should be eliminated, namely the Personnel Manager, his assistant and the Industrial Relations Agent. Their duties can be divided between the General Manager and the Chief Accountant. The Chief accountant does not have either the formal background or the experience for this demanding job. He is also responsible for sales for which he is also neither qualified nor experienced. A well-trained, experienced accountant is urgently needed. Within the engineering department, the acting manager does not have the necessary formal technical training and needs supervision. When serious problems arise, it is necessary to call in an engineer from outside the company.

In the present situation, with severe maintenance and other technical problems, there is an urgent need for a qualified, experienced engineer. Sales should be handled by the General Manager instead of by the Accountant.

Another sensitive topic is the existing clinic which employs a nurse, who is well-paid, and a male assistant. According to the acting General Manager it is doubtful if this arrangement can be justified. This function might be handled by one person trained in first aid who would be able to handle simple accident cases. Serious cases, anyway, have to be sent to Monrovia. The clinic represents a relatively heavy burden on the finances of the company. These recommendations would not in any way jeopardize the functioning of the company but would substantially reduce its overhead costs.

(b) Physical plant

The 10 tonnes FFB per hour press line is limited in capacity to 7.3 tonnes FFB per hour due to the constraints of the sterilisation units, thresher and digester, and waste cake conveyor. However, the factory has never even produced at this level. It is therefore recommended that the plant be rehabilitated for a maximum hourly capacity of 7.3 tonnes FFB by a limited amount of new equipment and a full range of spares for all the equipment, which will remain after rehabilitation. This would include the following major items:

(i) New boiler system of increased capacity (minimum 9 tonnes water per hour), including water treatment unit and chimney. Until this new boiler is installed, certain spares would still be required for the existing boiler system such as refr tory cement, gauges and steam pipes of various sizes.

(ii) Construction of ramp together with buffer storage hopper and feeder conveyor to enable tractors to tip the fresh fruit directly into sterilisation cages or into the buffer storage hopper.

(iii) Forty new sterilisation cages to cope with the peak season demand.

(iv) Installation of a feed conveyor to the top of the threshing unit and installation of spare parts to the thresher.

(v) Repair of the 2.9001 digester to ensure that all arms are re-installed and that all temperature and pressure gauges are replaced.

(vi) Repair of the 10 tonne FFB per hour press to ensure that the maximum possible extraction rate from the fruit can be achieved. During the initial rehabilitation, the 5 tonne press would not be repaired due to the high costs involved. This unit could possibly be repaired later from profits generated by the rehabilitated 10 tonne line.

(vii) Increasing the capacity of the waste cake screw conveyor by speeding up the unit, or alternatively installing a larger unit.

(viii) Utilisation of the kernel nuts as a saleable product rather than as a waste product to be burnt in the boiler. This could possibly be limited to the idle kernel oil mill located in the port area, which has a mechanical roller extraction unit.

(ix) Repair of the Caterpiller 105 KVA generator motor.

(x) Supply of a shaper machine, milling machine, hand tools and cutting tools for the lathe, to enable proper maintenance to be carried out on the factory.

(xi) Repair of all tractors and small and large trailers to increase the supply of fresh fruit to the mill.

(xii) Commencement of a detailed preventive maintenance scheme once all the necessary spare parts have been installed in the machines.

(xiii) Improvement in the management, line supervision and co-ordination of departments in the production and maintenance sections to improve the utilisation of available personnel.

All buildings are in good condition and require no major rehabilitation work.

(c) Inputs

Various aspects of input supply were discussed in Section 7.2.1 (c), including requirements and suggestions focused on an improved raw material supply situation.

Rehabilitation requirements include the following:

(i) Substantial strengthening of managerial capabilities for planning of all activities; leadership to stimulate and activate employees and supervision of all activities.

(ii) Reactivation of the nursery and procurement of palm oil seed of suitable improved variety, if necessary through import.

(iii) Establishment, as soon as possible, of new palm oil plantations, according to a precise plan of operation, followed by a replanting scheme of the old plantations starting not later than the mid-1990s.

(iv) Repair of the existing pool of tractors, trailers for transport of FFB, and tractor-mounted slashers; adoption of a rigorous preventive maintenance programme for all equipment; modification of existing trailers to increase the loading capacity to 5 tonnes FFB.

(v) As soon as possible, rehabilitation of all existing plantations, including clearing and pruning, and arrangements for classification of the land (soil sampling and analyses) to facilitate appropriate fertilizer application according to requirements.

(vi) Detailed elaboration of a system for purchase of palm oil fruit from potential outgrowers, including responsibilities and obligations of both parties, a pricing system, and procedures incorporating payment according to quality.

(vii) Identification of smallholders and others who may be interested in supplying palm oil fruit, followed by proposals and negotiations, as required, of binding agreements for supply to WAAC.

(viii) Improvement of the existing rehabilitated tractor transport organization to be able to cope with increasing transport volumes. This will include the acquisition of additional tractors and trailers with a capacity of not less than 5-6 tonnes, preferably with a hydraulic tipping device.

(d) Plant performance/costs and price structure

The bleaching installation should be utilized at a higher capacity in order to increase the share of higher value-added bleached oil in the total sales of the plant. The volume of bleached oil production relative to production of premium and industrial oil would depend on relative production costs and relative selling prices.

The present lack of information on production costs is a very serious constraint on the efficient operation of WAAC. A system to monitor costs on a monthly basis should be established immediately.

(e) Marketing

WAAC operates in a sellers market and consequently there has not been any great need for marketing activities. All the produced palm oil has easily been sold. The sales function is taken care of by the Chief Accountant. The size of the local market is such that when the rehabilitation of the mill has taken place, it will be necessary to set up sales outlets in the capital and possibly engage agents abroad.

The market is a competitive one. However, the competition suffers from inefficiency and absolute milling capacity. If and when the competition improves their efficiency, WAAC should be prepared to meet this competition with a well functioning sales organisation, geared to both domestic and international markets.

7.3 Baker Homegrown Poultry Farms, Inc. (BHPF)

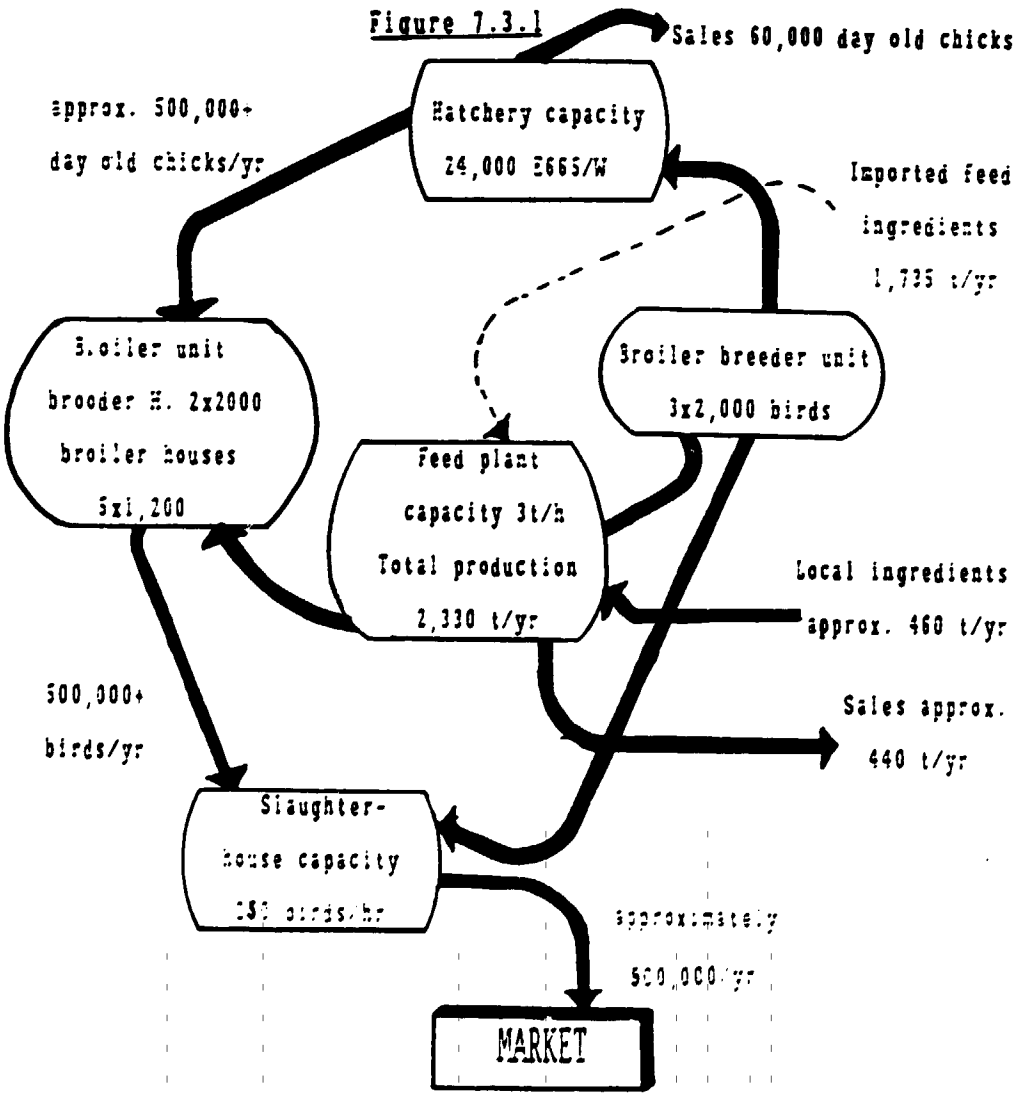
7.3.1 Existing situation

(a) General

The Baker Homegrown Poultry Farms, Inc. (BHPF) is an integrated operation for production of broilers for the Liberian market. It was established in 1972 and expanded until 1974, when all facilities were available to produce at full capacity. Peak production was achieved in 1979/80. During the coup in 1980, some of the key components, the broiler breeder units, were looted and all birds destroyed. Efforts were made to continue production of broilers using imported day-old chicks. However, the supply of feed became unreliable and many disturbing events forced BHPF to cease operation in 1985.

In the early days, production of table eggs and pork were included in the product list. However, only the integrated broiler operation is being considered for rehabilitation at this stage. The necessary facilities are currently available but in need of rehabilitation in varying degrees. Figure 7.3.1 illustrates the project components, their linkages, and approximate capacities and/or output.

Figure 7.3.1



(b) Management and organization

Baker Homegrown Poultry Farms, Inc. is a private company that was established in 1972 by Dr. Christian E. Baker who served as its President.

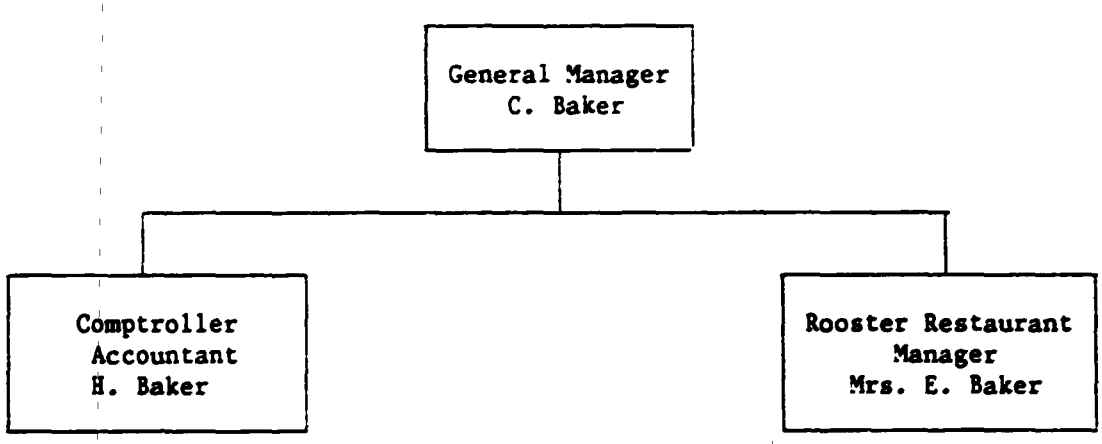
The present shareholders are the Baker family with 80 per cent of the shares; VISCONE, a Panamanian company whose Directors are based in Switzerland, and Santos hold the remaining 20 per cent of the shares.

The Board of Directors consists of the following persons:
Dr. Christian Baker (Chairman)
Dr. Henry Baker (son)
Mrs. Emilia Baker (wife of Mr. C. Baker)
Mr. Len Superwood
Mr. Christop Wurz, VISCONE, Switzerland
Mr. Len Schmiege, VISCONE, Switzerland

Baker Homegrown Poultry Farms, Inc. has been dormant since 1983, having been severely affected by the coup in 1980. The company was ransacked, existing equipment was partly or completely destroyed, and 15 thousand birds were killed or stolen.

According to Dr. C. Baker, he was forced to leave the country after the coup since he feared for his life.

Figure 7.3.2: Management and organizational structure of Baker Homegrown Poultry Farms, Inc. (up to 1983)



The company is a family operation and will remain so. Dr. C. Baker's intention is to leave the day-to-day management of the company to one of his sons, although he plans to act as Chairman and Adviser to management. He plans to bring in qualified people from outside the family for positions such as Sales Manager and Production Manager. Dr. Baker is a Liberian citizen who received his B.SC. degree in Agriculture from South Carolina State University and a doctorate in veterinary medicine from Michigan State University in the United States. He has been Director of Research at the Central Agricultural Research Institute in Monrovia, President of Cuttington University College and President of the Chamber of Commerce in Monrovia. He has also served on the

boards of several companies in Liberia. According to Dr. Baker, there is a severe shortage of competent persons in the top and middle management levels in Liberia. Most of the best people left the country at the time of the coup and very few have returned. This fact may be a constraint for the company when it is rehabilitated and qualified people at the middle management level are sought.

Mr. Baker considers that it will be necessary to bring a few technical advisors from abroad before rehabilitation commences, as he is aware that there have been a number of technological advances in the industry since he was last in business.

(c) Financial structure

Baker Homegrown Poultry Farms, Inc. is a Liberian company with minority foreign interest. Since the company has ceased to operate since 1983, its stock of 10,000 shares has no par value. According to Dr. Baker, the shares are distributed as follows:

- Mr. Christian E. Baker	4,620 shares
- Mrs. Amelia Baker	1,650 shares
- Mr. Henry Baker	330 shares
- Vaiscona, Inc.	1,700 shares
- Santos	1,700 shares
	10,000 shares

Background documentation

Many important historical documents were not available for scrutiny since they were destroyed during the coup. The following analysis is based on an examination of the 1980 and 1981 un-audited financial statements which were available.

Table 7.3.1: Balance sheet for the years 1980 and 1981

	1980 $	1981 $
1. Current assets	1,797,267	1,022,431
2. Current liabilities	176,001	1,470,621
3. Long term debt	2,241,069	2,612,465
4. Fixed assets	926,752	904,261
5. Total assets (including other assets)	3,022,336	1,938,603
6. Capital employed	2,548,018	456,071

Ratio Analysis

Table 7.3.2: Working capital and financial ratio

(L$/per cent)

	1980	1981
1. Working capital	L$1,621,266	-L$448,190
2. Current ratio	10.2%	0.69%
3. Debt ratio	79 %	210 %

Table 7.3.2 shows that working capital declined from $1,621,266 to minus $448,190 between 1980 and 1981. The current ratio dropped from 10.2 to 0.69, while the debt ratio rose from 79 per cent to 210 per cent during the period under review. The analysis suggests that in 1980 liquidity was very favourable. The picture changed in 1981 when the company experienced a liquidity and debt servicing problem, due to the very damaging impact of the coup. One can conclude that the project was adequately capitalized both in terms of working and fixed capital in 1980, although creditor's funds constituted the bulk of the financing.

According to Table 7.3.3, the company suffered losses of $328,695 in 1980 and $1,613,488 in 1981.

Table 7.3.3: Income statement - 1980 and 1981

		1980 $	1981 $
1.	Sales	1,273,118	1,807,761
2.	Cost of Sales	1,362,738	2,376,522
3.	Operating Expenses	101,881	1,044,727
4.	Other Expenses	178,664	
5.	Other Income	41,470	
6.	Net Loss	328,695	1,613,488

The depreciation rates used for the buildings (2.5 per cent), plant and machinery (16.67 per cent), vehicles (33.33 per cent) and office fixtures (10 per cent) are all realistic in relation to the conditions prevalent in Liberia and the expected useful life of the assets. The depreciation rates follow the legally allowable rates imposed under the Liberian tax code.

(d) Buildings and installations

The main installations are situated at Paynesville, 20 km from Monrovia, and comprise the following:

Feed plant

The building housing this plant is of concrete block construction with corrugated steel sheet roofing and appears to be in good condition throughout. The building is divided into two sections, a 13m x 10m grain store and a 34m x 10m milling area, which also contains a store of 5m x 9m. Immediately adjacent to the feed plant building are three 9m diameter steel storage bins, type Brock, each with a storage capacity of 550 tonnes of grain, for a total storage capacity of 1,650 tonnes of grain. The bins all have underfloor aeration units to prevent grain spoilage and all appear in good condition, requiring very little refurbishment. Grain deliveries were discharged into a ground receiving pit and a mobile screw conveyor fed the grain into the appropriate storage bin. Another screw conveyor ultimately discharged grain from the bin into the grain store of the feed building for the daily production requirement.

A screw elevator in this store feeds the surge bin in the milling area, which in turn feeds via a weighscale the Kelly Duplex (Ohio) hammer mill unit. Other additives to the feed mix such as calcium, mineral salts and antibodies are weighed and fed into the mill from two feed-trays at the base of the duplex unit. This mill, which is in good condition, has a capacity of 3 tonnes per hour; therefore, the expected output per 8 hour shift at 87.5 per cent efficiency is 21 tonnes. However, the normal practice in the past was to operate the mill for only 5 hours per day over six days, giving a potential weekly output of approximately 79 tonnes.

Also in the milling area are:

a) One small hammer mill, which was used to crush oyster shells to provide the calcium additive for the feed. The electrics on this machine appear in poor condition and the air-blower motor is missing; however, the machine could still be utilised in a rehabilitated plant provided adequate precautions were taken to first sterilise the shells to prevent any possible salmonella contamination.

b) Two portable Mulmix grinders, both having two trays for additives. These are rated at one tonne per hour but were used infrequently prior to the plant's closure, as the 3 tonne per hour machine could easily cope with all normal requirements. Neither of these portable machines would be used in any rehabilitation programme, although they are both in working order. Outside the mill building are two milled feed storage bins, each with a capacity of $6m^3$. The bins have been erected on a concrete bridge to facilitate the loading of vehicles. Feed was also milled for other poultry farmers and animals such as swine and horses.

Slaughterhouse and processing building

The slaughterhouse and processing section occupies the entire ground floor of a building with overall dimensions of 25m x 12m ($300\ m^2$). Above approximately half this area on the first floor are five offices and on the second floor are two partially completed apartments. The building is of reinforced concrete frame construction with concrete block walling and corrugated steel sheet roofing. The buildings are structurally sound but require minor maintenance work to walls, floors and roofing.

Attached to one end of the slaughterhouse is a 5m x 9m chicken holding pen with a section separated from the main pen for the hanging of chickens and throat-cutting. No stunning was carried out prior to throat-cutting, which is contrary to normal internationally accepted standards. A chain conveyor fitted with hooks transports the birds into the main slaughterhouse building through a bleeding tunnel and scalding tank to the picking unit, which removes all the feathers. After picking, the birds are cleaned on the line. Following cleaning, the birds are placed in plastic bags and the majority are immediately frozen in a blast freezer consisting of two 5-tonne freezer units. This system could produce 600 lbs (272 kg) of production in 4 hours, the first batch being loaded into the freezer at approximately 10:00 each day, the second at 14:00, and the third at 18:00 for overnight freezing. A total of 816 kg of frozen product could therefore be produced per day, or 4,080 kg of product per five day week.

Cold stores with a total capacity of 120 tonnes of frozen chicken have been constructed in the main processing area, including two 7.5 tonne stores and three 10 tonne stores. These small stores are all in good condition but the largest cold store will require considerable renovation, as the roof has totally collapsed.

The general condition of the slaughtering line is very poor, with considerable work required on the picking unit and complete replacement of the scalding unit. A stunner should also be a basic requirement on any rehabilitated line. Most of the hooks are badly corroded and should therefore be replaced.

Although a brand-new steam boiler (type Cleaver Brooks, Monitor - 150 ps; input, 1,046,000 BTU/hr) has been delivered to provide steam for the scaling unit, it was never utilised due to the cost of fuel oil.

A suspended steel tank was therefore used to provide the steam for the scalding unit. Heating of this tank was originally by butane, but wood was found to be a cheaper alternative and was used satisfactorily up to the closure of the plant. However, an efficient smallwood fired boiler would be necessary in a rehabilitated operation to reduce fuel consumption and to provide a more stable supply of steam.

The blast freezer unit is no longer operational as certain parts such as the compressor have been stolen. The condenser is still in working order, however, so total replacement should not be necessary.

With the present concrete flooring and concrete block walls, it is not possible to maintain hygienic standards comparable to those acceptable in Europe. As part of the rehabilitation, all the floors should be sealed with epoxy resin and all walls should be tiled to 2 metres above floor level. This will facilitate daily cleaning of the entire slaughterhouse.

Broiler houses

There are six broiler houses on the site, of which three are double units. The sizes of the units are:

1) 13m x 86m = 1,118 m^2 (with store at ground level)
2) 12m x 120m = 1,440 m^2
3) 12m x 160m = 1,920 m^2 (divided into two units)
4) 12m x 130m = 1,560m^2 (divided into two units)
5) 12m x 83m = 996m^2 (an additional 12m x 30m section requires a walling and roofing)
6) 10m x 109m = 1,090 m^2

The total area available equals 7,034 m^2. Each of the basic units normally contained 9,000-12,000 birds. The bases of the broiler houses are constructed of concrete block, with walls of wire mesh and corrugated steel roofing. Each of the houses has its own individual water tank (sufficient for three days requirement) and feed silo. The water in each of the water tanks was treated immediately after each filling to ensure that the risk of infection to the chickens was minimised.

Each of the houses was fitted with two feeding lines, circular plastic feed bowls being provided at 1m spacing for the full length of the house. Circular domed electrically heated brooders (Type: A.R. Wood) were placed in the central area of some of the broiler houses for the brooding of the day-old chicks brought from the hatchery. At the age of approximately 6 days the chicks were debeaked to minimise pecking damage.

The normal flock cycle would be:

- crowing	6-8 weeks
- clean-out	1-2 weeks
- flock cycle	10 weeks

Cleaning out of the litter manure was previously carried out by hand, but in any rehabilitation scheme the use of a tractor unit would be recommended to increase efficiency.

Many of the tube feeders have been damaged and some of the brooder units are inoperative. As the original supplier of these brooder units is now out of business, some completely new units would have to be purchased. New feeding units for many of the houses would also be advisable.

Hatchery

This unit is also located in Paynesville but is approximately 6 km from the broiler house installation. The hatchery building of a size 12m x 30m (360 m^2) is well constructed in concrete blocks with a rendered finish and corrugated steel roofing. It has been well maintained and no major repairs are required. Also on site are two housing units, one for the manager of the hatchery and the other for two families.

The hatchery, which has a capacity of 24-25,000 chicks per week, consists of four areas:

(a) Egg heater unit

This consists of trays of eggs stored on heated boxes fitted with 150w bulbs. The eggs are normally kept in the trays for approximately seven days so that all infertile eggs may be discovered and rejected.

(b) Incubation

Fertile eggs are loaded into one of the two three-cabinet Robbins incubators, each cabinet holding a total of 14,000 eggs. The total capacity of the incubators is therefore 84,000 eggs. Incubation takes 19 days; therefore, an average incubation production of 4,421 eggs per day is possible working on a continuous 24-hour basis, which is essential in hatchery operations.

(c) Hatching

A Robbins hatcher with a capacity of 14,000 eggs has a hatching cycle of 2 1/2 to 3 days. Two hatchings per week were normally carried out, giving a grown output of 28,000 chicks per week and a net output (after infertile eggs and fatalities) of approximately 24-26,000 chicks per week.

There had been problems with the humidity unit on the Robbins hatcher prior to the closure of the hatchery in 1984 and also some occasional trouble with the double-fan air circulation unit. Obtaining some of the spares for this equipment could prove to be very difficult. All Robbins machinery had been serviced by a Dutch company which has since left West Africa. However, such hatcher units and incubators normally have long lives, and competent local electricians should be able to service the control equipment on these units. Should the original control equipment fail, alternative types can easily be installed.

(d) Chick storage and despatch area

Chicks from the hatcher are stored in chick-trays prior to collection by the customer or despatch to the broiler farm.

In order to prevent disease, all chicks were vaccinated and the hatchery was sprayed with disinfectant three times per week. In full production, six employees were required to operate this facility.

Due to uncertain electricity supplies, the hatchery has a 69 KVA standby generator, which is still in very good condition.

Breeder farm

The company also has a parent-stock breeder farm in the Monrovia area which supplied eggs to the hatchery. The farm facilities consisted of two breeding houses each with a capacity of 1,000 birds, and five breeding houses with capacities of 1,200 birds each.

The operating system was to start the brooding of a new flock in one of the brooding houses and after four weeks the flock was divided. The capacity of the breeding farm was 800,000 eggs per year.

The physical sizes of the houses are:

Two Brooder houses	12m x 9m = 108m^2
Three Breeder houses	45m x 10m = 450m^2
One Double Breeder houses	91m x 10m = 910m^2

This facility was completely ransacked at the time of the 1980 coup, which led to immediate closure of the hatchery due to lack of eggs from the breeder farm. The company therefore ran until 1985 on imported day-old chicks.

In addition to the above facilities in the Monrovia area, the company also had an egg layer unit at Meleike close to Gbarnga, but this unit was closed down in 1980 soon after the coup. There is no plan to rehabilitate this particular unit under this rehabilitation programme.

(e) Inputs

The inputs to the integrated operation at Baker Homegrown Poultry Farms comprise a variety of feed ingredients and parent breeder day-old chicks. The day-old breeder chicks and most of the feed ingredients must be imported. The major inputs to the hatchery, the broiler unit and the slaughterhouse are basically obtained from within the enterprise (intra-enterprise linkages).

A rehabilitated BHPF is intended to keep about 6,000 parent stock producing about 600,000 day-old broiler chicks. 500,000 of these will be marketed after slaughtering, leaving at least 50,000 for sale as day-old chicks, taking into account mortality losses.

Feed and feed ingredients

The total demand for feed is estimated at 1,890 tonnes per year at full capacity operation assuming 3 per cent losses. Depending on the short-term development with regard to trade restrictions for feed, formula feeds or the grain component and concentrate may have to be procured from National Milling.

At present National Milling has a monopoly on processing poultry feeds. No strict regulations are enforced to ensure the buyer that it complies with the standard requirements for efficient industrialized poultry production. In cases when a wheat flour milling company is the sole manufacturer and distributor of poultry feeds, excessive quantities of wheat bran are invariably included in the formula. As a result, the birds do not perform well and the feed conversion rate is poor.

A better alternative for BHPF is to import directly the necessary ingredients to be mixed with local supplies, mainly brewers grain and palm oil.

According to the formulas used by BHPF in the past, the overall demand for ingredients for the BHPF breeder and broiler units are given in Table 7.3.4.

Table 7.3.4: Demand of feed ingredients at BHPF/year

Ingredients	Tonnes/year
Concentrate feed	260
Soyabean meal	380
Yellow corn	760
Palm oil	390
Brewers grain	92
Additives	8
Total	1,890

The imported ingredients are readily available on the international market provided that the foreign exchange is made available to BHPF.

In the long term, it is unsatisfactory that only 25 per cent of the total demand of feed is of domestic origin. With a long-term strategy for development of local supplies of feed ingredients, the ratio between domestic supplies and imports could probably be changed to 4:1, or even higher. Scrap fish and fish offal could be turned into fish meal if the fishery industry were to be developed, geared to export of processed products. Oyster shells could be cleaned, sterilized and ground to provide mineral supplements to a growing poultry industry. With the appropriate incentives, there is no reason why energy feed components, such as yellow corn and dried cassava, could not be grown in Liberia, nor possibly as a second crop after upland rice. For an integrated poultry enterprise like BHPF, for instance, about 160 hectares of yellow corn would be sufficient, assuming a crop yield of 5 tonnes per hectare.

The feed processing unit at BHPF has a rated mixing capacity of 3 tonnes per hour. In order to utilize these facilities better, about 440 tonnes of formula feed will be processed in addition to BHPF's own requirements and sold to other broiler farms.
Table 7.3.5 gives the estimated total input demand of feed ingredients.

Table 7.3.5: Estimated demand for feed ingredients/year

Ingredients	Tonnes
Concentrate	320
Soybeans	470
Yellow corn	935
Palm oil	480
Brewers grain	115
Additives	10

Parent breeder stock, eggs and day-old chicks

Parent breeder stock can readily be obtained from a number of commercial broiler companies in Europe or the United States. The annual requirement will be about 5,000 breeder hens and the necessary number of males (15 per cent of the number of females) for a total number of 5,750 birds.

The parent breeder hens are expected to produce about 800,000 eggs per year for supply to the hatchery. Assuming 80 per cent average hatchability and 5 per cent breakage, the annual output will be 600,000 day-old broiler chicks for supply to the broiler unit.

In the 1970s, when BHPF operated as an integrated enterprise, the average mortality in the broiler units was 7 per cent. It is reasonable to assume that the performance in a rehabilitated BHPF will be about the same. Hence, the total supply of day-old chicks to the broiler unit will tend to be on the order of 540,000 per year. The margin, about 60,000 day-old chicks, will be sold to broiler farms.

At this level of production, the capacity utilization of the hatcher is 65 per cent. As the hatchery should comprise one profit centre in the integrated enterprise, the capacity utilization should preferably be increased to 80 per cent or above. This would increase the sales of day-old chicks by 150,000 per year.

To achieve this target, about 1400 breeder birds will have to be added. A less attractive alternative from a hygienic point of view is to hatch eggs on contract. Assuming that necessary precautions are taken, this alternative should nevertheless be considered.

Broilers for slaughter

The annual supply is estimated at 500,000 birds which gives an average of some 9,6000 per week. The rehabilitated slaughterhouse is intended to maintain the present rated capacity of 250 birds per hour, implying that slaughtering will have to be carried out 30-40 hours per week. Significant variation in cultivation is likely to have a detrimental effect on established routines and should be avoided.

(f) Product range

The occupant is planning to sell 500,000 chickens, 50,000 day-old chicks and 440 tonnes of compound feed annually. Most of the sales of compound feed will consist of formulations of poultry feed, according to the specific nutritional requirements of birds at different development stages.

(g) Plant performance/cost and price structure

Plant performance could only be assessed after start-up. Utilization capacity will be highly dependent on the import supplies of the major raw materials, such as yellow corn, parent breeding stock, soyabean meal, and feed corn.

From the beginning of the operation, the prices of chicken and feed sold by Baker Homegrown Poultry Farms should be competitive with these prevailing on the domestic market. Sales prices of chicken meat, considered an essential commodity, are monitored by the Ministry of Agriculture.

The current retail price of chicken meat amounts to L$3.85/kg, corresponding to a wholesale price of L$3.30/kg and to L$3.20/kg farm-gate price for dressed broilers. Sales prices of spent hens at present go up to L$7/bird. The reason for such high spent hen prices at present is the shortage of fresh chicken available on the market. The position will, of course, ease with the rehabilitation of Bakers Homegrown Poultry Farms. C.i.f. import prices of poultry feed vary between L$20.50 per bag for layers and L$22/bag for broilers.

Imports are exempt from customs duty, but are subject to an inspection fee (1.5 per cent of the C.i.f. value of goods), port and handling tax (0.65 L$/bag), and transport costs (about 0.025 L$/bag, mile). Production costs of broilers and breeders are primarily dependent on the cost of feed, most of the ingredients of which are presently imported.

Inputs and import dependence

About 80 per cent of raw materials that will be used by Baker Homegrown Poultry Farms, Inc. for feed manufacture are imported (yellow corn, soyabean meal, vitamins and mineral pre-mixes and concentrates, salt and fish meal). Over 90 per cent of purchases of machinery and spare parts are also imported.

Protection

The company's products are not presently protected on the Liberian market. Indeed, there are plans to reduce the 15 per cent duty on imported frozen chickens to 10 per cent.

Firms in the branch presently pay no duties on the imports of raw materials, machines and spare parts, as poultry is classified as a priority industrial sector in Liberia.

(h) Market and competitors

After rehabilitation, the company's main products will be broilers, day-old chickens, and poultry feed. The market for day-olds is very difficult to estimate since there are no reliable statistics on demand available. The total market for broilers is estimated at about 1,200,000. The market for poultry feed is estimated at around 4,460 tonnes.

The market has gone through a slow change during the last few years. Because of decreasing activities in the mines at Nimba, this very important market which included many expatriates has decreased accordingly. The Monrovia market has increased by almost as much as the Nimba market has decreased, leaving the total market almost unchanged.

The company had about 42 per cent of the broiler market before 1980, and it is very likely that it can capture the same market share again after rehabilitation. The only real competition at the moment are imports of broilers and day-olds. Local production of these two products is marginal. At the same time, the market is slowly growing.

Regarding chicken feed, Baker's future market share is estimated at about 52 per cent including the feed necessary for the company's own operations which is estimated at 42 per cent. The only competition here is National Milling Co (NMC), which supplies grain to the company. Baker can arrange other suppliers if necessary.

Dr. Baker has an interesting business idea which involves a sales package deal to farmers in rural areas. He plans to combine sales of day-old chicks with medicines and poultry feed, the total deal to be sold by sales people who are qualified agriculturalists.

As the company is a reputable producer of chicken and poultry feed, it will also be able to assist the farmers with advice, medicine and so on. This approach will necessitate an expansion of the company's sales personnel because it will be necessary to have experts located in farming areas to provide service. There are several training institutions in Liberia that train young technicians in various agricultural disciplines that can supply this expertise.

Another market opportunity has been created as a result of the Government's very stringent new laws and regulations regarding the shooting of wildlife in Liberia. Practically all animals are now protected and no hunting is allowed. As a consequence, a severe problem of protein deficiency has emerged among people in the rural areas since earlier sources of protein are no longer available. This new situation opens up a growing market for day-olds and poultry feed.

Shortly before the coup in 1980 the Baker family started the Rooster Restaurant which soon became the most important market and outlet of the company's chickens, absorbing almost 25 per cent of its production. After rehabilitation they plan to re-open the restaurant.

Another outlet for broilers could be the many "meat shops" that exists in and around Monrovia. These meat shops are now selling cheap meat and poultry, mainly from Eastern Europe. However, they will be able to save foreign exchange and get more reliable deliveries buying what they need from the Baker company. Before 1980 the company had a small export trade with Sierra Leone of day-olds and broilers. This market, plus Guinea's, could be penetrated successfully again when the plant is rehabilitated. The main constraint on the development of these export markets is the cost of transport, which necessitates refrigeration and air conditioning.

The company used radio and television to promote their products; these as well as billboards will be the media for future sales promotion. There was no sales promotion for export products. The only official body used for exports was the Mano River Union which assisted the company in collecting payments for a delivery to Sierra Leone.

For distribution of chickens, the company had two 6 tonne trucks delivering day-olds within a radius of 7 miles. Customers living outside this area and in rural areas had to collect day-olds at the hatchery. This pick-up sales method is not satisfactory from a hygienic standpoint; therefore, a van will be needed so that the company will have full control over all deliveries and that the risk of infection will be minimized. Broilers were normally delivered early in the morning to supermarkets, restaurants, and other customers in the Monrovia area. For deliveries to Buchanan and Nimba, two important markets, deliveries were made with the trucks. Airfreight was used for deliveries to other parts of the country. It is expected that these arrangements will be resumed after rehabilitation.

(i) Constraints

Management and organization

The main constraint is believed to be finding competent and qualified persons at middle management level.

Marketing

Cheap imports from subsidized East European markets reduce the size of the market available for domestically produced chickens. The high cost of buying and maintaining refrigerated and air-conditioned trucks for distribution of broilers and day-olds outside the Monrovia area is another constraint.

Buildings and installations

Constraints under this category include: lack of mobile plant for delivery of feed and chicks, operational problems with the storage bin screw discharge conveyors, and lack of spare parts for the screw elevators and other milling equipment.

The slaughterhouse equipment is no longer operational in its present state and does not meet normal international slaughtering standards for hygiene and method of slaughter. The blast freezer unit, which is required to freeze the processed chickens, is no longer operational. The roof of the

largest cold store has totally collapsed and cannot be used in its present state. Much of the broiler house feeding equipment has been damaged or has deteriorated, such that it cannot be used without considerable repair or replacement. The domed brooders require spare parts but the original supplier of the equipment is now out of business. New units are therefore necessary. The parent-stock breeder unit is no longer operational; therefore, no eggs can be supplied to the hatchery.

Inputs to the feed industry

Because National Milling is currently the sole producer of poultry formula feeds, this presents a constraint on other potential producers in the industry. Another constraint is the limited range and number of sources of domestic feed ingredients supply.

Plant performance/costs and price structure

At present, BHPF's performance would be affected by: 1) "dumping" of imported chickens on the domestic market, 2) shortage of foreign exchange to purchase major inputs, and 3) lack of strength in the Poultry Farmers Association which reduces its influence with the authorities.

7.3.2 Rehabilitation requirements

(a) Management and organization

Since Dr. C. Baker wishes to slowly phase out his involvement in the day-to-day operation of the company and since there is uncertainty as to whether or not his son Henry will take over, it will be necessary to take a close look at management.

Since the company has to build up a sales network, one of the first and most important tasks will be to find a competent sales manager with appropriate experience.

Because of the integrated nature of the enterprise, it is also recommended that a production manager be appointed for the whole operation. A financial manager should also be appointed.

(b) Physical plant

Feed plant

In the feed plant section, the method of transfer of the corn into the storage bins from an uncovered open pit was impractical during the rainy season and many problems were experienced with the mobile screw elevators which now require refurbishment. A more practical method of grain transfer would be by a bulk delivery vehicle such as a tractor and trailer unit, which has its own compressor unit. Such a vehicle can deliver grain in any weather conditions and the load is also more secure. (Bagged grain is much more susceptible to being stolen.) A bulk delivery vehicle is therefore recommended as part of any rehabilitation programme for the feed mill. A range of spare parts for the mill equipment should also be provided to ensure that a daily output of 21 tonnes is achievable on a consistent basis on a single-shift operation. This quantity is in excess of the requirements of the breeder farm and broiler farm but offers scope for increased sales of feed to other poultry farms and animal farms.

The discharge system from the silos to the mill building should be improved by utilising shorter discharge screw conveyors feeding a conveyor to the storage area. A lean-to shed should be constructed over the delivery pit, so that the pit is protected from the rain. Consideration must be given to improving the feed system into the bins by utilising a vertical bucket elevator feeding short corn-conveyors to each of the three bins. Improving the transfer of milled grain from the mill to the despatch bins must also be carried out.

Slaughterhouse

The slaughterhouse unit cannot be operated in its present condition and requires total refurbishment, including the complete replacement of the scalding unit and all hangers. A stunning unit should be installed in any rehabilitation programme to meet normal international standards on humane slaughtering.

The blast freezer unit must be rehabilitated at the same time as the slaughtering and processing line, as the market dictates that the majority of production must be frozen. Although the condenser unit is still in working order, other parts such as the compressor have been stolen and must be replaced. All refrigeration units for the cold stores should be checked thoroughly, and adequate spares should be available for these units under any rehabilitation programme for the slaughterhouse. As the roof of the largest cold store has collapsed, this must be rebuilt to ensure that sufficient cold-storage facilities are available in the rehabilitated unit. An alternative would be to purchase refrigerated containers and build these units into the processing building. Since these have the advantage of being completely self-contained units, they could prove to be more economical. To improve hygienic standards in the slaughterhouse and to facilitate daily cleaning, it is necessary to repair and seal all the concrete floors and to tile all walls up to 2m from floor level.

In order to improve the working environment for employees, either air-conditioners or fan units should be installed in the main production area.

Broiler houses

The actual structures of the broiler houses are in reasonable condition but minor maintenance work such as repair and replacement of wire-mesh walling has to be carried out before the broiler houses can be used. The feed system in all of the houses has to be checked thoroughly and refurbished. Some replacement tubing and screw conveyor units will be required and new electrically heated brooder units will be necessary before the broiler houses can recommence production. Approximately 50 per cent of the tubing can be salvaged to refurbish some of the houses, but half of the houses will require completely new systems.

The method of hand-cleaning the houses between flocks is time consuming and labour-intensive. It is recommended that a small tractor unit with a front-end loader unit be provided under any rehabilitation programme, so that removal of the litter manure can be carried out more efficiently. The tractor unit would also be utilised for other tasks on the farm, such as bulk delivery of grain.

Hatchery

The main requirement for the rehabilitation of the hatchery is the provision of spare parts for the Robbin's hatcher and incubators, especially the controllers, humidity unit and air-circulation unit. The manufacturer of this equipment was stated to be out of business; therefore, obtaining some spares may prove difficult. However, items such as controllers can easily be replaced by other types, should the original ones fail totally for any reason.

Breeder unit

As the parent stock breeder unit was completely ransacked, total refurbishment of this facility will be necessary in order to provide the eggs to the hatchery. All feeder units should be replaced.

Cost of rehabilitation

At this stage no accurate costs can be provided but indicative costs for each section are as follows:

	US Dollars
Feed plant equipment	18,000
Slaughterhouse equipment and building improvements	100,000
Broiler house equipment	60,000
Hatchery equipment	5,000
Parent stock breeder unit equipment	10,000
Tractor complete with front-end shovel and bulk feed compressor unit	70,000
Roof and building repairs - general	15,000
Total	178,000

(c) Inputs

The success and viability of a rehabilitated BHPF operation will be determined to a very large extent by the availability and regularity in input supply of parent stock, day-old chicks and suitable feed ingredients.

Once the physical rehabilitation of the integrated project components is implemented, the import supply is not expected to create major difficulties given that the necessary foreign exchange is available for imports. For satisfactory development of BHPF and the Liberian poultry industry as a whole, the following objectives should be considered and implemented.

Short-term

- Abolish present monopoly related to domestic manufacturing of poultry for formula feeds;
- Establish and enforce regulations pertaining to quality of commercialised feed to ensure that all feeds comply with efficient poultry production.

Long-term

- Consider the important linkages that can be achieved in the overall strategic plans for development of agriculture and agro-related industries. A thriving feed industry can only be developed based on adequate domestic supplies of basic feed ingredients, particularly energy and protein.

Domestic supplies of such commodities are a constraint on the feed industry in Liberia. Overall rehabilitation needs include, for instance, domestic processing of fish meal, with increased industrialized poultry production, processing of poultry offal for recirculation, and cultivation of suitable feed grain crops or other starchy crops suitable for formula feed manufacturing.

(d) Plant performance

A rational system of protection for the domestic poultry industry needs to be designed so that subsidized chickens from Eastern Europe are no longer imported (except in times of emergency) and development of the domestic industry is promoted.

(e) Marketing

The most important need, compared to the pre-1980 situation, will be for the creation of a genuine sales department under a sales manager. This person will be responsible for building up a sales network to serve Monrovia and the rural areas.

The sales manager would also be responsible for after-sales service in the area covered by this network. This means that his responsibilities will also include supervision of the sales persons/advisors selling the package of day-olds, feed and medicine from the company. The sales manager should also organise the distribution system, paying special attention to packaging and labelling of the products, something which is easily overlooked in the developing countries.

CHAPTER 3

GENERAL OBSERVATIONS AND RECOMMENDATIONS

3.1 General policy recommendations

Public finances

The Liberian economic crisis is being tackled seriously by the Government. In his Annual Message to the Nation on 27 January 1989, President Samuel K. Doe stated: "There is a need to ensure that expenditures are contained within the budget. We must make sure that we spend only that what we have."

The mission is of the opinion that the Liberian economy is at a turning point in this regard. Forceful measures are essential to ensure that the President's message is caried out.

Industrial policy

Rehabilitation and promotion of manufacturing, especially based on renewable natural resources, agriculture, forestry and fishery, requires a coherent policy framework which would include:

- Protection policy, for both resources and processed products,
- Taxation policy,
- Credit policy,
- Exchange rates policy,
- Interest rates policy.

The new Investment Incentive Code, currently being debated, include's the Government's proposal to seriously pursue the establishment of secondary processing industries. This is an essential and indispensable element for industrial development.

The attraction of Liberia as a host economy to private foreign investment will now be enhanced by the section of the Code entitled "Security of Investments". According to this section, local and foreign investments are guaranteed by the Government and are fully protected by law. Provisions are also made that private enterprises cannot be nationalized under any circumstances.

Employment

One of the more important mechanisims for spreading the benefits of development in a country is creating and maintaining employment, especially for women and those in rural areas.

In the Bomi Hills area, Bomiwood and WAAC play a crucial role in maintaining present employment and generating additional jobs. The existence of these two companies, providing income to the local employees, helps to compensate for the losses the area has experienced from closing the mine. The rehabilitation of WAAC has an important social dimension, as WAAC cannot be replaced as a major employer in the southern part of Grand Mount County.

In Nimba county, bordering Guinea in North East, Lamco is to close down in the near future. Lamco is one of the largest employers in Liberia and by far the most important export earner. The resulting loss of employment opportunities in this region will have serious socio-economic implications. Therefore, every effort must be made to create replacement jobs.

The rehabilitation of Bomiwood and WAAC will play a key role in stemming job losses and creating new ones in both primary and secondary processing industries, using renewable natural resources.

Maintenance of renewable resources

Sustained employment, production and income from agriculture, forestry and fishery-based processing industries is not possible if the productivity of these resources is not secured.

Hence, to neglect the development of agriculture, the protection of natural forests through appropriate forest management, or the safeguard of future fishery resources is to violate the OAU's deciaration of The Industrial Development Decade in Africa, to which Liberia subscribes.

The lesson of enterprises like Bomi Hills Mines, and now LAMCO, is that if a country exports unprocessed non-renewable resources and does not maintain its renewable natural resources, one day it will discover that these resources are depleted.

The mission strongly disagrees with FDA's and Bomiwood's view that round logs should be exported as a means of financing the operation of the Bomiwood saw mill. In the mission's view the Liberian Government should not support such actions which would reverse the rationale of the company. Instead, it should emphasize the enforcement of regulations speeding up development of national forestry-based manufacturing.

Management training

In the plants visited, many very serious weaknesses exist both at top and middle management levels. It is suspected that this is a general feature of Liberian manufacturing and that the problem should be addressed at a national level.

Management education and training at the University of Liberia, LIDA, the Polytechnic, and other institutions should be geared to Liberia's specific needs. The recommendations for regeneration of Liberia's agro-based industry include a project design to investigate and formulate an appropriate programme for extended management education and training in Liberia.

8.2 Financial observations

General observations

All the plants visited have incurred losses since their inception for the following reasons:

1. Undercapitalization of fixed and working capital;

2. Extremely high debt ratio, implying that creditors financed the bulk of the operation;

3. Acute liquidity problems, resulting from inadequate capitalization and maturity of current portion of long term debt.

Recommendations

Plant rehabilitation will require the infusion of adequate capital, including working capital, at least in the amount undercapitalized. This will be the responsibility of the shareholders. In the event they are incapable of injecting the required funds because of their own financial situation, an option such as restructuring capital may have to be considered.

8.3 Management, organisation and marketing

General observations

All the operational companies visited suffer from significant deficiencies at middle management level. Top management is also clearly deficient in many cases. WAAC, for instance, has had six General Managers since 1980. This situation is a cause for deep concern since it appears to be the case for the industry as a whole. The "brain drain" that began after the 1980 coup and that has continued ever since has contributed significantly to the low level of management expertise. Moreover, business confidence has also been adversely affected.

Management, training and information systems are generally inadequate for routine tasks such as accounting, administration, inventory, purchase and sales.

All the companies visited are now operating in a sellers market, and consequently none has an effective sales organisation.

In order to export, the companies themselves have to transport the products to the nearest harbour for shipping. In the context of rehabilitation and expansion, it will be necessary to improve both the sales organisation and the distribution systems, notably in regard to distribution in the rural areas and to export markets.

Institutions involved in export promotion include the Ministry of Commerce and Industry and the Liberia Chamber of Commerce. This involvement is very marginal, however, since every company seems to look after its own export promotion, without governmental assistance. Liberia has no permanent trade organisations abroad for export promotion. However, in some cases the Liberian embassies abroad have proven helpful. The Mano River Union has also assisted in collecting payments in some cases.

Recommendations

Careful consideration should be given to the issue of management training and related facilities. Especially, middle management needs to be trained and the number of posts reduced in order to control costs and cut the top-heavy nature of the organizational structure. Where required, computer systems should be introduced, accompanied by relevant training programmes.

While management training at University and higher technical levels needs to be upgraded, the establishment of a specialized management training institute should also be considered.

All the companies visited need to improve their marketing and distribution systems and training in these areas when rehabilitation has taken place.

In the medium and long-term perspective, it will be necessary to introduce trade representation abroad, geared to specific export markets. These could be placed in regional groupings such as ECOWAS and the MRU, or further afield in the EC, for example, where Liberian exports have significant market opportunities under the trade provisions of the Lome Convention.

8.4 Physical plant and buildings

General observations

In all the enterprises visited, the condition of the buildings was relatively good, with only minor maintenance work required for the walls and roofs. In one case, certain upgrading of the building is required for hygienic reasons.

The condition of the installed machinery varied considerably depending on the company. However, a planned maintenance programme was invariably lacking due to a common failure to obtain necessary spare parts. This is caused by a lack of both foreign exchange for the imported spare parts and local funds for the domestic spare parts. Some of the machinery was in a state of total breakdown as a result of the lack of spare parts and the consequent lack of regular maintenance. Most companies, therefore, have been operating machinery on the "breakdown maintenance" philosophy that is without any preventative maintenance schedule. Only when the machine broke down did it receive any serious attention. Even where management was aware of the short-comings of this policy and its effect on plant production and the company's financial performance, shortage of spare parts and working capital for normal routine maintenance meant that they had little choice but to operate machinery until it broke down.

Many, but not all, plants had well-experienced maintenance staff; however, most require further training in the organization of planned maintenance schemes and would benefit from further supportive skill training. Shortages of tools, workshop equipment, and consumable maintenance items such as steel, oxygen and acetylene, in addition to the required spare parts for machinery and mobile plant, meant that it was frequently impossible for the maintenance personnel to work efficiently.

Recommendations

In the case of almost all the plants visited, their rehabilitation would necessitate the supply of technical assistance to improve the training of maintenance personnel, especially in the proper organisation of preventative maintenance schemes. However, this alone would not be sufficient to revitalise a company. As part of the technical assistance programme, a limited number of hand tools, machine tool parts, and spare parts for machinery should be provided and assistance given with finding the required finance for the purchase of certain new workshop and plant machinery.

In most cases, this technical assistance for maintenance personnel should be combined with additonal assistance for training managerial and production personnel so that all relevant employees are thoroughly familiar with the new maintenance procedures.

8.5 Regional dimension

Liberia is a member of the ECOWAS and the Mano River Union (MRU). Both are regional organizations seeking to promote intra-regional trade through harmonization of tariffs and the gradual elimination of all trade barriers. Industrialization is also to be promoted by identifying and locating projects in member states that have the greatest comparative advantage. This approach should ensure an enlarged market for the region.

Over the years, attempts at fostering regional co-operation along similar lines has not been very successful. One of the main hindrances has been the multiplicity of currencies, most of which are not convertible. This has discouraged trade among the member states, who became trading partners with Europe and the United States. Trade in the region as a proportion of total trade is very small (less than 4 per cent). Another factor explaining the unsuccessful attempts at regional cooperation has been the lack of effective strategies for the implementation of industrial policies. Almost all member states are producing similar types of goods, which consequently, cannot be easily marketed in the other member states. Apart from the foregoing, an adequate level of support to these organizations through contributions from member states has not been forthcoming because of the economic and financial difficulties faced by most of the countries.

8.6 Inputs

General observations

Given that the processing plants are technically capable of full capacity utilization, the inadequacy of the raw material supply is a serious constraint. The reasons for this are summarized as follows:

(a) Insufficient transport capacity as a result of inadequate preventive maintenance and lack of spare parts due to lack of finance, especially foreign exchange;

(b) Financial shortages which lead to shortages of material input. These shortages, in turn, impede the full utilisation of available raw materials;

(c) Low performance per unit of time caused by delays in payments to the workers and few incentives, if any, to promote good performance;

(d) Degrading of plantations due to age and inferior maintenance, resulting in low yields, failure to replant and, above all, failure to establish new plantations on available areas as replacement for currently uneconomical plantations;

(e) For the animal feed industry, non-availability of most domestic ingredients, including feed grain and pulses and dried cassava.

Recommendations

(a) Adopt routine and properly monitored preventive maintenance programme of transport; make increased efforts to procure and maintain the necessary spare parts, seeking outside financing if necessary;

(b) Improve economic management to facilitate financing of essential material inputs;

(c) Arrange for wage payments to be paid regularly and on time; introduce appropriate incentive schemes to improve workers' performance;

(d) Embark, as soon as possible, on a programme to establish new plantations and replant the old ones;

(e) Initiate the growing of corn, pulses and other feed crops which are essential for an emerging Liberian animal feed industry;

(f) In the medium term, process domestically available animal protein offal, i.e. from future fish processing industries and slaughterhouses, into proten animal feed ingredients.

8.7 The manufacturing sector

General observations

The manufacturing sector experienced a sharp decline in output after 1980. Its contribution to GDP in 1985 had fallen to 8.2 per cent in 1985, from 10 per cent five years earlier. This situation is reflected by the unusually low rates of utilization of installed capacities. According to the Ministry of Commerce and Industry, capacity utilization did not exceed 30 per cent for the manufacturing sector as a whole. As a result, production costs increased and domestic products became uncompetitive with equivalent imported goods.

The manufacturing sector is heavily dependent on imports of equipment, intermediate inputs and raw materials. Import duties, especially on machinery and spare parts, increase production costs even further in many instances. The increasing scarcity of foreign exchange acts as a serious constraint on the ability to purchase inputs as well as the ability of the majority of plants to operate.

The general lack of sufficient working capital and the difficult access to cheap commercial credits resulted in temporary or definitive shut-downs of several plants. Failure to pay the labour force or chronic delays in payment, especially in the public sector enterprises, resulted in a general lack of interest in the production process.

The lack of clearly defined policies and development objectives for each of the manufacturing branches led to rather hectic and disorganized production and the loss of market shares for Liberian products in export markets. Skilled labour at the company level is generally insufficient, especially in accountancy, bookkeeping and pricing.

Recommendations

- Policies should be defined and incentives provided in order to make better use of domestic natural resources and to enhance the availability of local raw materials as substitutes for imported goods;

- An effective system of foreign exchange allocation needs to become operational in order to allow manufacturing companies to import supplies of equipment and spare parts.

- The training of accountancy and book keeping personnel should be institutionalized and reinforced at the national level.

- Specialized training programmes could be developed for personnel related to specific manufacturing sectors.

CHAPTER 9

SUMMARY OF PLANT-LEVEL FINDINGS AND RECOMMENDATIONS

9.1 Bomiwood

9.1.1 Management and organization

Findings

Bomiwood has a very impressive Board of Directors including two Ministers and the Governor of the National Bank of Liberia. However, the difficulty of having such a high level Board is that it is virtually impossible to gather all members together for board meetings. The management at middle management level is top heavy. Two posts are redundant, namely, Comptroller and Personnel Manager.

Recommendations for the short-term

- The Board of Directors should include representatives from the private sector. More members should have technical backgrounds and proven experience in wood-related industries.

- Eliminate the two posts of Comptroller and Personnel Manager. The duties of the Comptroller can be taken over by the Chief Accountant and his aides and the duties of the Personnel Manager can be divided between the General Manager and the Chief Accountant.

- Up-date the existing computer systems with appropriate software and utilize it efficiently for administration, accounting, purchases and sales. A preferred alternative would be to acquire a more modern system.

9.1.2 Marketing

Findings

The market for primary processed wood products is booming both in Liberia and abroad, so there has not been a need for marketing. Domestic sales usually take place "at the factory gate"; export sales are handled by two representatives from the Federal Republic of Germany who sell on a 4 per cent commission basis.

Except for transporting export products to the harbour for shipping, no distribution system exists.

The main obstacle to increased total sales is the lack of supply of raw material.

The finish of the processed products is reasonably good for the domestic market, but substandard to ensure good sales on the sophisticated export markets of Europe and the United States.

Recommendations for the short-term

- Improve the quality of the products through the installation of additional finishing units on the moulding machine, correction of the mechanical problems on the first saw-line, and training of the workers, especially in the aspects of quality control.

- After the constraints on the input side are eliminated, engage representatives in Monrovia to increase sales on the local market.

- Conduct a market survey in Europe in order to ascertain new export markets. Follow-up with appropriate measures.

- Carefully evaluate the present sales department to determine whether personnel resources are adequate.

Recommendations for the medium- to long-term

- Create an efficient distribution system for processed products.

9.1.3 Physical plant

Findings

The physical plant of the sawmill and all of the buildings are in good condition. The main requirement within the mill is for a range of essential spare parts for most of the equipment. However, the condition of the logging trucks is a serious problem, as their constant breakdowns and low utilisation levels directly affect the amount of raw material which can be brought to the factory.

Recommendations for the short-term

- A new machine should be purchased to convert some of the waste wood into high-value parquet flooring.

- Adequate essential spare parts for all major machinery, especially the overhead crane and main sawing units, should be purchased as part of any rehabilitation programme.

- Additional attachments should be purchased for the tongue-and-groove moulding machine to achieve export-quality products.

- Improved training in the operation of all machinery is essential, as some deficiencies in the aspects of safety were identified in the sawmill, where accidents had previously occurred.

9.1.4 Inputs

Findings

The supply of round logs to the sawmill is inadequate and to some extent erratic. This is caused primarily by inadequate capacity for transporting the logs from the forest area to the sawmill, in addition to unacceptable down-time of the two log extraction skidders. The number of trucks available for these transports is sufficient, but the frequent breakdowns and down-time for repairs result in an average truck utilization of only 30 per cent.

Recommendations for the short-term

(i) Upgrade the logging equipment either by replacing the present skidders with new ones, or adopt a comprehensive preventive maintenance programme with major overhaul and changing of worn parts to ensure sufficient log extraction capacity. The second option is expected to be cheaper and quite satisfactory.

(ii) Retain the technically-best log truck and replace four old trucks by new ones to eliminate the present bottleneck of supplying round logs to the saw mill.

(iii) Continue to harvest present annual volume of logs (17,000/18,000 m^3) and make up the balance to full capacity utilization of the sawmill by purchasing round logs elsewhere, preferably based on contract deliveries.

9.1.5 Costs and price structure

Findings

The entire system of pricing should be restructured, beginning with extracted wood prices and including the pricing of wastage and its implications for the price of other sawnwood products.

Recommendations for the short-term

The company should monitor the evolution of world market prices of sawnwood products and the competition from neighbouring African suppliers of similar types of hardwood products.

9.2 West African Agricultural Corporation (WAAC)

9.2.1 Management and organisation - WAAC

Findings

WAAC has a very top heavy organization with several redundant functions at middle management level. The Acting General Manager is lacking in creative ideas and leadership qualities.

Recommendations for the short-term

As soon as possible eliminate the posts of Personnel Manager, Assistant Personnel Manager and Industrial Relations Agent.

The Plantation Manager should be replaced with a qualified, experienced person. The vacant post of General Manager should be filled by a well-trained and experienced person with creative ideas.

9.2.2 Marketing

Findings

No marketing is done at the moment since WAAC operates in a sellers market; sales is the responsibility of the Chief Accountant. The company's problems are on the inputs and production side of its operation.

Recommendations for the short-term

As the palm oil market is likely to remain a sellers market for the foreseeable future, no extensive sales promotion is necessary. The responsibility for sales and marketing should be taken over by a qualified General Manager.

9.2.3 Physical plant

Findings

(1) WAAC's physical plant has been neglected for a number of years, due to the lack of foreign exchange to purchase spare parts. The maintenance staff appears competent and experienced and has performed minor maintenance work whenever materials have been available. Without the necessary imported spares, it has been impossible for them to maintain the plant properly or to follow a planned maintenance schedule.

(2) Because of significant restraints in the production process at the sterilisation stage, threshing stage, and digestion stage, the 10 tonne FFB per hour capacity of the press can never be realised, even if all of the machinery is refurbished. The plant must be rehabilitated on the basis of a maximum 7.3 tonne FFB per hour capacity on a single shift and double shift working, and 7 tonnes FFB per hour on three-shift working.

Recommendations for the short-term

1) Financial resources must be found for the procurement of adequate spares for all fixed and mobile plant.

2) Financial resources must be found for the procurement of a new boiler system of increased capacity, a water treatment plant, and a new chimmney.

3) Forty additional sterilisation cages must be purchased so that the mill can operate more efficiently in the peak season.

4) A new discharge conveyor and storage hopper should be installed on the thresher unit, together with a feed conveyor to the top of the thresher.

5) Equipment must be purchased for the workshops including a shaper, milling machine, cutting tools for the existing lathe, and hand tools to improve the quality of the plant maintenance. Some technical assistance should be provided for additional training of all maintenance staff.

Recommendations for the medium-term

Conduct a feasibility study regarding the installation of a small refinery in the Monrovia area to process the crude oil from the WAAC plant and also some crude oil from other palm oil producers. The size of the refinery should be carefully assessed, based on the guaranteed output from WAAC plus a small proportion of the output from other producers. The refinery should have its own bottle manufacturing plant so that it is not dependent on another company for the supply of its container requirements. The industrial oil produced at the refinery could be utilised eventually in a small soap manufacturing facility on the same site, which could be installed once the refinery itself was established and profitable.

9.2.4 Inputs

Findings

The Wangekor plantations are in a poor state due to lengthy neglect. The palm oil plantations are all 18 to 20 years old, permitting only another six years or so of economic production. The present annual yield has not been calculated on the basis of recent experience. It is anticipated, however, that the average yield in the next few years will be about 6 tonnes per hectare, assuming that the necessary rehabilitation activities are carried out in the plantations very soon. No plans had been made in the past for planting new trees. This creates a very serious constraint since the viability of a rehabilitated oil mill operation largely rests on the availability of palm oil fruit.

In summary, the palm oil fruit from the Wangekor plantations is expected to meet about 60 per cent, on average, of the input demand. This situation will continue until the mid-1990s.

Shortage of plantation workers in general, and harvesters in particular, is a serious constraint on efficient utilization of the plantations. This is the result of scarcity of funds and delays in payment of wages, sometimes by as much as 2-3 months. Consequently, only 1,167 hectares out of the total 1,600 hectares were harvested in 1988. The average yield for that year is estimated at 2,300 kg per hectare as compared with 3,390 kg in 1985. The present transport capacity would be far from adequate when the entire plantation is utilized and the yields increase as a result of better management.

Recommendations for the short-term

(i) Slash the undergrowth in all plantations and prune the palm oil trees.

(ii) Arrange for analysis of soils or leaves in old plantations as a basis for the appropriate application of plant nutrients, including trace elements.

(iii) Elaborate a detailed plantation management programme to ensure that existing palm oil trees produce at their maximum capacity, and supervise proper implementation.

(iv) Review and improve present employment and payment procedures to ensure that an adequate number of workers are engaged to cope with the necessary plant rehabilitation and maintenance efforts.

(v) Repair existing tractors and trailers in order to increase the transport capacity of FFB.

(vi) Repair existing tractor-mounted slashers to facilitate timely slashing of the plantations, using both mechanical and manual inputs.

(vii) Identify and conclude contract agreements with outgrowers in order to secure the supply of raw material in the immediate future.

Recommendations for the medium-term

(i) As soon as possible, initiate a programme for establishment of new plantations, including revitalization of the nursery, soil classification and planting of about 540 hectares during five consecutive years.

(ii) Replace obsolete tractors, trailers and tractor-mounted slashers.

(iii) By the mid 1990s, commence replanting of existing plantations, to be completed over a period of five years. Make the necessary arrangements for cutting and piling all trunks for use as firewood at the oil mill (estimated total quantity about 300,000 m^3).

9.2.3 Plant performance/costs and price structure

Findings

The operation of the processing plant is very inefficient, with resulting production costs that are very high. The company has operated at a loss since 1980. No systematic analysis of either production performance or costs is presently being undertaken. Short monthly reports are sent, after delays, to the Ministry of Agriculture, although they do not appear to result in any actions on the part of MOA.

Cost and price data are not systematically recorded, although the company seems to have purchased an IBM personal computer which should have facilitated the establishment of a monitoring system. Data was not available for such obviously necessary facts as the breakdown of sales by type of oil for the years 1985 and 1986.

Recommendations for the short-term

- Upgrade skills in the Accounting Department.
- Establish a monitoring system relating to costs and outputs.
- Calculate production costs for each individual product.
- Calculate the volume of palm kernels by products and their relative values as boiler fuel or as processed palm kernel oil in order to determine whether they should be processed for commerical sale.
- Assess the feasibility of building a palm oil refinery supplying the whole Liberian market and determine its optimum location.
- Assess the feasibility of packing the palm oil in bottles for sale on the local market.

9.3 Baker Homegrown Poultry Farms, Inc. (BHPF)

9.3.1 Management and organisation

Findings

The company is dormant at present and there is no business activity. What physically remains of the company after the coup is guarded by a number of caretakers. The hatchery is looked after by the farmer manager of the hatchery, Mrs. Roberts.

Recommendations for the short-term

Providing that the rehabilitation program is implemented, it will be necessary to hire outside expertise for short periods before business is resumed because of technological changes since 1980. It will also be necessary to hire middle-management employees, namely financial, sales and production managers.

Recommendations for the medium-term

The company should purchase a PC-computer system for accounting, administration, inventory, purchasing and sales. This system should also be utilized for record keeping on the production side of the company as well as for the sales service staff in the field.

3.3.2 Marketing

Findings

No marketing is done at present since the company is dormant.

Recommendations for the short-term

- Hire a sales manager.
- Organise a sales network in the rural areas.
- Organise a well functioning distribution system with refrigerated and air conditioned trucks and vans.

Recommendations for the medium-term

- Make a market survey in the neighbouring countries (Mano River Union) to penetrate these export markets.

- Install a computer system with adequate software for sales purposes.

3.3.3 Physical plant

Findings

The overall condition of the buildings is, on the whole, reasonable but minor maintenance work to walls and roofing is necessary prior to using the buildings again for production. The slaughterhouse building should be upgraded to improve hygiene standards by sealing the floor and tiling the walls.

All of the equipment will require checking and overhaul prior to re-use, with installation of spare parts where appropriate. Certain sections such as the slaughterhouse and broiler houses will require complete replacement of some items. The entire breeder farm unit must be refurbished with new equipment.

Recommendations for the short-term

1. The breeder farm must be provided with new feeder and watering units and all buildings must be repaired.

2. The hatchery incubator units and hatcher unit must be serviced and a new monitoring and control system installed, if required.

3. Purchase a tractor unit complete with front-end loader unit and compressor for pneumatic unloading of feed into poultry house feed silos.

4. Purchase spare parts for feed-mill. Improve the charging and discharge of the grain bins.

5. Dispose of the two portable Mulmix grinders.

6. Refurbish the complete slaughtering line, replacing the scalding unit and all hangers, and repairing the picking unit and refrigeration blast unit. Install a stunning unit and upgrade the building to improve hygienic standards.

7. Refurbish approximately half of the broiler houses with available tubing and equipment; provide completely new feeding equipment for the other half.

8. Purchase a small wood fired boiler.

9.3.4 Inputs

Findings

- Provided that the necessary foreign exchange is made available, the supply of present breeder stock presents no problems.

- National Milling is at present the only manufacturer of poultry formula feeds. No precise quality regulations exist to ensure that all feeds marketed are of sufficient quality or comply with standard minimum requirements for nutritional content and hygienic conditions.

- The poor domestic supply of feed ingredients is detrimental to the future development of the feed industry and also to increased domestic production of food of animal origin.

Recommendations

- Terminate the present monopoly for manufacturing animal formula feeds.

- Establish and enforce regulations related to commercial manufacturing of formula feeds to guarantee uniform quality of required standards. Provide certification on each log, giving at least major nutrient values such as energy, crude protein, crude fibre, crude fact, mineral and vitamin content.

- Identify, on a national level, possible domestic sources of feed ingredients and suitable means to exploit them. This could include introduction of new crops or extended production of existing crops. It would also include food processing industries which produce by-products that could be used as animal feed ingredients, for example, organized slaughtering and fish-processing industries.

9.3.3 Costs and price structure

Findings

- Production costs are highly dependent on the prices of the cost of feed, most of the ingredients of which are presently imported.

- There is a shortage of foreign exchange for the purchase of imported feed ingredients and spare parts.

Recommendations for the short-term

- Reinforce the importance of the Poultry Farmer's Association, which could pool and coordinate the imports of feed ingredients, negotiating betterprices on the international market.

- Increase the availability of foreign exchange for all importers of feed ingredients, breeder stock and spare parts.

- Examine the present level and structure of protection within the domestic poultry sector and the extent to which "dumping" from abroad exists in order to design a more rational protection system for the feed and poultry branches. This is a precondition for the development of the domestic poultry industry.

CHAPTER 10

SUMMARY OF PROJECT CONCEPTS

10.1 General

- Provide technical assistance (UNIDO) to carry out a feasibility study for a palm oil refinery and possible rehabilitation of the palm kernel mill in Monrovia.

- Provide technical assistance (UNIDO) to develop the wood processing industries, both primary and secondary, in order to increase the volume of exported processed timber.

- Provide technical assistance (UNIDO) to identify bankable joint venture possibilities in downstream rubber manufacturing industries, as a basis for the long-term development of the rubber industry.

- Provide technical assistance (FAO) for the planting of new oil palm plantations as well as assistance in their financing.

10.2 For all enterprises visited

- Improve the management training of all senior and middle management, especially in the use of appropriate management information systems.

- Improve the technical training of production and maintenance staff by means of technical assistance programmes (UNIDO), which would, include a limited number of essential spare parts as part of the training programme.

10.3 Plant level projects

Bomiwood

- Technical assistance programme (UNIDO) for a market survey in Western Europe, including identification of possible marketing agents.

- Technical assistance programme (UNIDO) to commence in 1990 for a three-year period to continue the training of managerial, accountancy, maintenance and production personnel. A limited number of essential spare parts would be provided by UNIDO as part of the training programme. UNIDO would assist in obtaining finance from third parties for the new equipment requirements.

- Technical assistance programme (UNIDO) for a feasibility study on the utilisation of waste wood for new products such as parquet flooring and sawdust briquettes.

NAAC

- Technical assistance programme (UNIDO) over a three-year period for the training of managerial, production and maintenance personnel, including provision of some essential spare parts. Assistance will be given by UNIDO in obtaining the required finance for new machinery.

Baker Home Grown Poultry Inc.

- Provide technical assistance (UNIDO) for a detailed techno-economic feasibility study to determine the viability of rehabilitation.

- Provide technical assistance (UNIDO) over a one year period for the implementation of the rehabilitation, including training in current poultry technology and installation of management information systems. UNIDO would assist in obtaining the necessary commercial financing from third parties.

APPENDIX

(i) Ministry of Commerce and Industry (MCI)
The formulation and co-ordination of commercial and industrial policy are the main functions of this Ministry. It issues manufacturing licenses and import and export licenses. MCI serves on the Board of the National Investment Commission.

(ii) Ministry of Agriculture (MOA)
The Agriculture Ministry's main function is to design and coordinate effective agricultural development programs. MOA liase with the Ministry of Industry in the issuance of food product import and export licenses.

(iii) National Investment Commission (NIC)

This commission is essentially the investment promotion arm of the Government. NIC formulates and coordinates private investment programs in the manufacturing sector. It drafts the Investment Incentive Code.

(iv) Ministry of Finance (MOF)
Taxation of enterprises/companies falls under the aegis of the Finance Ministry. MOF formulates and coordinates private and/or joint venture investment programs in the export sector. The Ministry of Finance chairs the Economic and Financial Management Committee and serves on the NIC Board.

(v) Ministry of Planning and Economic Affairs (MPEA)
MPEA serves as the GOL's principal economic policy planning institution. This Ministry is the architect of the Economic Recovery Program.

(vi) National Bank of Liberia (NBL)
The National Bank of Liberia is the main institution involved in the formulation and execution of foreign exchange policies. It was the apex institution for on lending IDA soft loans to the private sector through the participating financial institutions. NBL is also charged with the responsibility of formulating credit policies to the private sector, particularly Small Medium Enterprises.

(vii) Liberian Bank for Development and Investment
LBDI is the main instrument for financing investment in the Liberian agro-industrial sector. It provides loans to public and private enterprises. Seventy per cent of LBDI's capital structure is foreign owned. Its functions now include commercial activities.

(viii) Agricultural and Cooperative Development Bank (ACDB)
ACDB was established to finance agricultural activities exclusively. In addition to this function, the Bank now engages in commercial activities.

(ix) Small Enterprise Financing Organisation (SEFO)
SEFO was established to render technical and financial assistance to small and medium enterprises by financing their investment activities. A large part of its funds used to come from IDA's soft loan facility through the NBL.

(x) Bureau of State Enterprises (BSE)
The main function of this Bureau is to formulate and oversee policy involving the state enterprise sector and advise the EFMC, as well as to render technical and managerial assistance to state enterprises.

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ANNEX 1

Table A.1: Liberia: Major exports 1981 82-1986-87
(millions of US dollars)

	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86	1986/87 preliminary estimates
Iron ore	331.1	325.1	295.3	257.8	272.3	245.6	217.8
Rubber	93.6	68.8	59.8	87.5	78.4	82.7	81.6
Logs and timber	45.9	45.4	38.1	33.5	33.6	41.0	63.9
Diamonds	23.5	28.9	19.5	12.6	8.8	6.2	4.1
Coffee	24.7	19.2	18.7	17.8	18.3	22.7	9.8
Other exports	11.5	4.9	5.0	4.0	9.3	9.0	12.1
Re-exports	13.5	4.8	7.3	5.3	3.0	3.0	2.4
Total exports, f.o.b.	554.7	508.9	452.5	433.4	436.5	419.0	395.8

Source: IMF.

Table A.2: Liberia: Balance of payments estimates, 1983/84-1988 1/

	1983/84	1984/85	1985/86	1986	1987	1988
Current account	-26.5	42.1	64.7	47.5	-47.7	-37.5
Trade balance	20.8	117.5	145.4	115.8	56.3	45.5
Exports, f.o.b.	(433.4)	(436.5)	(419.0)	(381.2)	(374.9)	(390.6)
Imports, c.i.f.	(-412.6)	(-319.1)	(-273.6)	(-265.4)	(-318.6)	(-342.1)
Services (net)	-105.7	-115.0	-123.2	-111.3	-125.5	-134.6
of which: interest due on public debt	(-54.0)	(-67.2)	(-78.7)	(-86.3)	(-103.1)	(-113.9)
Transfers (net)	58.4	39.7	42.5	43.0	21.5	48.6
Private	(-36.6)	(-37.8)	(-32.0)	(-22.4)	(-18.4)	(-11.7)
Public	(95.0)	(77.5)	(74.5)	(65.4)	(39.9)	(60.3)
Capital account	-47.1	-139.2	-147.2	-177.7	-120.5	-138.1
Official long-term	19.0	2.3	-7.0	-25.6	-50.4	-72.5
Disbursements	(69.0)	(60.3)	(42.0)	(47.4)	(28.3)	(14.2)
Amortization due	(-40.0)	(-58.0)	(-66.0)	(-73.0)	(-78.7)	(-86.7)
Private (including errors and omissions)	-66.1	-141.5	-123.2	-152.1	-70.1	-65.6
Overall balance	-73.6	-97.1	-82.5	-130.2	-168.2	-175.6
Financing	73.6	97.1	82.5	130.2	168.2	175.6
National Bank of Liberia	41.7	-18.7	-39.7	-57.0	-62.7	-43.0
Assets (increase-)	(3.3)	(0.1)	(3.3)	(2.0)	(-)	(-)
Liabilities	(38.4)	(-18.8)	(-43.0)	(-59.0)	(-62.7)	(-43.0)
Use of Fund credit (net)	(37.0)	(-16.0)	(-42.7)	(-59.0)	(-62.7)	(-43.0)
Other	(1.4)	(-2.8)	(-0.3)	(-)	(-)	(-)
Arrears (accrual+)	14.8	96.8	122.2	187.2	230.9	218.6
Debt relief	17.1	19.0	-	-	-	-
Memorandum items						
External arrears (end of period)	48.6	140.4	291.4	422.2	671.7	890.3
IMF	(-)	(27.9)	(92.9)	(146.4)	(266.3)	(...)
Other multilateral organizations	(-)	(13.3)	(20.3)	(23.6)	(72.9)	(...)
Official bilateral creditors	(5.0)	(12.9)	(42.2)	(68.6)	(99.1)	(...)
Commercial banks	(43.6)	(86.3)	(136.0)	(183.6)	(233.4)	(...)
			(In per cent of GDP)			
Current account balance	-2.5	4.0	6.2	4.6	-4.4	-3.2
Overall balance	-6.8	-9.1	-7.8	-12.6	-15.4	-15.1

Sources: Data provided by the Liberian authorities; and IMF staff estimates.

1/ Data for 1983/84-1985/86 are based on the fiscal year (July-June); for 1986 onward, data are on a calendar year basis.

Table A.3: Gross official development assistance
(millions of US dollars)

	1980	1981	1982	1983	1984	1985
Bilateral						
United States of America	72.3	95.5	88.0	94.1	113.1	67.7
Federal Republic of Germany	33.0	66.0	63.0	57.0	89.0	54.0
Japan	13.3	17.0	11.5	21.0	12.2	8.1
United Kingdom	0.8	3.5	1.7	4.3	2.1	1.4
Multilateral	28.7	19.8	22.6	30.4	25.8	26.5
International Development Association	4.9	5.9	7.5	10.8	14.7	12.2
African Development Fund	-	-	-	2.9	3.7	3.7
European Community	4.4	4.0	3.1	3.8	1.9	2.3
Total	101.0	115.2	110.5	124.5	138.8	94.2
of which grants	46.6	69.1	69.4	62.9	88.5	63.1

Source: IMF.

Table A.4: ERP manufacturing sector expenditure
(millions of US dollars)

Programme in oder of priority	Source	1986/87	1987/88	Total
1. Small and medium scale Enterprise financing	GOL	0.4	0.4	0.8
	FOR	1.3	2.0	3.3
	TOT	1.7	2.4	4.1
2. Development of two growth centres	GOL	1.3	2.0	3.3
	FOR	0.2	0.7	0.9
	TOT	0.3	1.0	4.1
3. Establishment of a technological centre for metal casting	GOL	0.1	0.2	0.3
	FOR	0.2	1.0	1.2
	TOT	0.3	1.2	1.5
4. Study on development rural industries based on local resources	GOL	0.2	0	0.2
	FOR	0.6	0	0.6
	TOT	0.8	0	0.8
5. Study on the supply of machinery for hire purchase to SMEs	GOL	0.1	0	0.1
	FOR	0.1	0	0.1
	TOT	0.2	0	0.2
Total for the five priority programmes and projects	GOL	0.9	0.9	1.8
	FOR	2.4	3.7	6.1
	TOT	3.3	4.6	7.9

Source: Economic Recovery Programme.
GOL = Government of Liberia; FOR = Foreign; TOT = Total.

ANNEX 2

Persons met by the UNIDO mission to Liberia

LBDI

H. Eric Cooper	Project Manager, LBDI
F. Dennis	Project Implementation Manager, LBDI

WAAC

S. Sirleaf	Acting General Manager, WAAC
R. Sherman	Legal Adviser, Ministry of Finance and minority shareholder in WAAC
J. Kweikwei	Senior Accountant
J. Grimes	Acting Manager, Engineering Department
F. Sowah	Plantation Manager
B. Sherman	Personnel Manager
M. Nyallay	Field Co-ordination

BOMIWOOD (BomiHills Wood Processing and Training Corporation)

J. Melvin Thornes	Managing Director, Bomiwood
K. Schmidhammer	Chief Consultant
J. Zankah	Controller
A. Zwannah	Sales Manager
M. Somah	Sawmill Manager
P. Hydeh	Maintenance Manager
K. Johnson	Forestry Manager (Acting)
G. Saydee	Personnel Manager
D. Kwabo	Chief Accountant

Baker Homegrown Poultry, Inc.

C. Baker	President and Chairman of the Board
H. Baker	Controller
Ms. M. Baker	Hatchery Manager

Bright Poulty Farms

C. Bright	General Manager

NIC

M. George Bolo	Chairman
P. Smith	
Ms. van Oyen	

USAID

T. Born	Commodity Management Officer
F. Witherns	Economic Adviser
Ms. Erves	

Bureau of State Enterprises

E. Akinselure	Director-General
P. Williams	Deputy Director-General

European COmmunity Delegation

M. Barford	Economic Advisor
Mr. Daley	Agricultrai Advisor

UNDP

F. Blain	Resident Representative
D. Temu	Deputy Resident Representative
Ms. Kumar	JPO

Ministry of Finance

Hon. D. Farhat	Minister
P. Subah	Deputy Minister (Expenditure and Debt Management)
D. Hinneh	Director, Bureau of Technical Services
Ms. Bernard	Assistant Minister (Revenue) and Chairman, RCC

Ministry of Planning and Economic Affairs

E. Taylor	Minister
Ms. Ward	Deputy Minister, Economic Affairs
Mr. Kock	Economic Advisor

Ministry of Commerce and Industry

J. Weseh McClain	Minister
Ms. Dennis	Assistant Ministry, Industry

Ministry of Agriculture

J. Hillary Mason	Assistant Minister, Technical Services for Livestock
G. Toweh	Minister
J. Mehn	Deputy Minister for Planning and Development
P. Young	Deputy Minister for Technical Services
P. Killen	Assistant Minister, Technical Services
Ms. M. Varfley	Co-ordinator

Forestry Development Authority

E. Emelo	Deputy Managing Director

Liberia Agricultural and Fishing Enterprises, Inc.

R. Oesterlund	Managing Director

MOLDACO

M. Davis	President and General Manager

Sinoe Rubber

S. Hare	General Manager

Agromachines Ltd.

J. Boakai	President/Director

Rubber Corporation of Liberia (RCL)

A. Bass	General Manager
T. Taylor	Administration Manager
L. Roberts	Controller
Mr. Cassell	Quality Control Manager
	Production Manager
	Engineer
A. Padmore	Commercial Services Manager

UNIDO (Washington) Investment Promotion Service

A. V. Daza	Investment Promotion Officer

ANNEX 3

UNIDO's approved and/or operational technical co-operation projects

(approved = PAD issued)

Republic of Liberia

Backstopping Responsibility	All.Acc.Code	Project Number	Project Title
IO/IIS/INFR Mr. Goubet	J12102	SI/LIR/88/801	Assistance to the Division of Standards in the Ministry of Commerce and Industry
IO/IIS/INFR Mr. Hisakawa	J12105	TF/LIR/87/001	Associate expert (Ms. van Oyen) (multifund to DP/LIR/87/007)
IO/IIS/INFR Mr. Hisakawa	J12105	TF/LIR/87/003*	Associate expert (Mr. Nakano) (multifund to DP/LIR/87/007)
IO/IIS/INFR Mr. Hisakawa	J12105	DP/LIR/87/007**	Development of small and medium-scale enterprises (phase II) (continuation of DP/LIR/80/007)
IO/T/ENG Mr. Fritz	J13300	UC/LIR/88/254	Establishment of a metalworking common service facility in Liberia
IO/T/CHEM Mr. Williams	J13424	XA/LIR/89/609	Production of charcoal and briquetted fuel from woodwaste in existing sawmill/wocdprocessing industry in Liberia

* Large-scale project (= total allotment $150,000 or above)
** Total allotment $1 million or above

ANNEX 4

UNIDO's pipeline projects

Project number	Project title	Total budget - $
DP/LIR/38/XXX	Assistance to Liberia woodworking and capentry industrial association (LWCIA)	271,000
DP/LIR/88/XXX	Liberian industrial free zone authority revitalization study	72,000
XX/LIR/88/XXX	Processing of agricultural crops (cassava)	235,000
XX/LIR/88/XXX	Strengthening capacity and capabilities of the Maritime Training Institute at Marshall	302,000