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UNIDO INDICATIVE PROGRAMME FOR

DEVELOPMENT OF THE COCOA

AGRO-FOOD INDUSTRIAL SYSTEM

IN

NIGERIA

2/21

Indicative Programme for the Integrated Development of the Cocoa Agro-Food Industrial System (AFIS) in Nigeria

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## LIST OF ABBREVIATIONS

ADB	African Development Bank
AFBTE	Association of Food, Beverage and Tobacco Employers
AFIS	Agro-Food Industrial System
CAN	Cocoa Association of Nigeria
CBN	Central Bank of Nigeria
CRIN	Cocoa Research Institute of Nigeria
ECOWAS	Economic Community of West African States
FAO	Food and Agriculture Organisation
FIRO	Federal Institute for Industrial Research, Oshodi
FOBTOB	Food, Beverage and Tobacco Senior Staff Association
IDDA	Industrial Development Decade for Africa
IFC	International Finance Corporation
ITC	International Trade Centre UNCTAD/GATT
MAN	Manufacturers' Association of Nigeria
MSADP	Multi-State Agricultural Development Programme
N	Naira
NECA	Nigeria Employers' Consultative Association
NEPC	Nigerian Export Promotion Council
NIDB	Nigerian Industrial Development Bank
NUFBTE	National Union of Food, Beverage and Tobacco Employees
PDSU	Programme Development Support Unit (of UNIDO)
RMRDC	Raw Materials Research and Development Council
SAP	Structural Adjustment Programme
SAR	Staff Appraisal Report (of the World Bank)
UNDP	United Nations Development Programme
UNIDO	United Nations Industrial Development Organisation
US \$	United States Dollar

## INTRODUCTION

The United Nation Industrial Development Organisation's (UNIDO) Programme Development Support Unit (PDSU) has been established to promote the programme approach methodology to the identification and formulation of Technical Assistance. During 1989 PDSU has contributed to preparation of the 1990-91 programme of the Industrial Development Decade for Africa (IDDA), with emphasis on the development and rehabilitation of agro-related industries.

Based on the first stage of work carried out by UNIDO to establish typologies of development patterns, Nigeria was selected as one country in Africa in which to carry out a study of an Agro-Food Industrial System (AFIS) of one line, out of which an Indicative Programme for Integrated Development of the line would be formulated. The Government of Nigeria was requested to collaborate in this AFIS study and agreed.

A "line" is one crop, and the study concerns analysing the system for the chosen crop from production, through primary marketing, processing and product marketing to identify the bottlenecks and constraints. The "Indicative Programme for the Integrated Development" has to address these bottlenecks and constraints by means of separate but inter-dependent projects, which can be of a Technical Assistance or Capital Investment nature.

The UNIDO consultant selected to carry out the mission worked in Nigeria from 18 January to 13 February 1990.

The line selected for study, at an inter-ministerial meeting of the Federal Ministries of Commerce and Industry and of Agriculture and Rural Development on 19 January 1990, was cocoa.

The consultant debriefed with representatives of the Federal Ministry of Commerce and Industry at the end of his visit, but not with the Federal Ministry of Agriculture and Rural Development due to officers attending a national agricultural conference held at the time. Final meetings were also held with a representative of the Federal Ministry of Finance and Economic Development, which collates AID matters, and with the Senior Industrial Development Field Adviser (SIDFA) of UNIDO.

Visits were made to two cocoa producing States - Ondo and Bendel - and to the Cocoa Research Institute of Nigeria (CRIN) in Oyo State.

The following is the full list of Ministries, organisations etc. with which meetings were held.

### NIGERIAN GOVERNMENT MINISTRIES

Federal Government  
Commerce and Industry  
Agriculture and Rural Development  
Finance and Economic Development

### PRIVATE SECTOR AGENCIES AND BANKS

Central Bank of Nigeria  
Nigerian Industrial Development Bank  
Cocoa Association of Nigeria  
Ondo State Farmers Congress  
Association of Food, Beverage and  
Tobacco Employers

State Governments

Trade and Industry, Ondo  
Agriculture and Natural Resources,  
Ondo  
Commerce and Industry, Bendel  
Agriculture and Natural Resources,  
Bendel

PUBLIC SECTOR AGENCIES/INSTITUTES

Nigerian Institute for Social and  
Economic Research  
Raw Materials Research and  
Development Council  
Cocoa Research Institute of Nigeria  
Ondo State Investment (Holdings) Co.  
Nigerian Export Promotion Council  
Federal Office of Statistics  
Monitoring and Evaluation Unit  
(Tree Crops)  
Federal Institute for Industrial  
Research, Oshodi

INTERNATIONAL AGENCIES

World Bank  
International Finance Corporation  
Food and Agriculture Organisation  
European Communities  
Economic Community of West African  
States  
United Nations Industrial Development  
Organisation  
United Nations Development Programme

COMMERCIAL COMPANIES

Cadbury (Nigeria) Ltd  
Owena Mills Ltd  
Cocoa Industries Ltd  
Ile-Oluji Cocoa Processing Co. Ltd.  
Cocoa Products Industry (Nigeria) Ltd.  
Food Specialities (Nigeria) Ltd.

SUMMARY AND CONCLUSIONS

The field mission in Nigeria on a study of the cocoa Agro-Food Industrial System (AFIS) was carried out between 17 January and 13 February 1990. Thirty-three Federal and State Government Ministries, public sector institutes and organisations, international agencies, private sector agencies and banks and commercial companies were met - some several times, and in some several sections or departments were contacted.

Cocoa is mainly a small-holder crop, present production is estimated as 180,000 m. tonnes of raw cocoa beans from some 700,000 hectares. Production is recorded in eleven States; Ondo State accounts for 55 to 60 per cent of the total and Oyo for 30 per cent. Fermentation and drying of cocoa beans (primary processing) is carried out by growers. Yields averaged 183 kg per hectare, 1986-88, which compares with potential yields of 1 m. tonne or more achieved by the Cocoa Research Institute of Nigeria (CRIN). The World Bank provided production project support in the period 1971 to 1981 and is providing further support under the Multi-State Agricultural Development Programme (MSADP) III; the two programmes provide for rehabilitation or replanting of some 155,000 hectares of cocoa.

Secondary processing of raw cocoa beans to cocoa butter, cake, powder (and liquor, occasionally) of international trade standards is undertaken by three factories, each with a notional capacity of 30,000 m. tonnes p.a. of raw beans. However, plant deterioration and inadequacies, lack of working capital and high farm gate prices caused a progressive decline in the quantity processed, which fell to an aggregate of only 8,000 m. tonnes of raw beans in 1989. There is one small factory which processes second grade beans into a low grade cocoa butter; it processed 200 m. tonnes of beans against a notional capacity of almost 4,000 m. tonnes in 1989.

Tertiary processing i.e. production of final consumer food cocoa-based products, is dominated by Cadbury Nigeria Ltd., followed by Food Specialities Ltd. and a number of smaller processors. One processor of secondary products also produces a cocoa-based food drink. The main products are cocoa-based food drinks and beverages; production of chocolate and other cocoa-based confectionery is small. There is a small production of skin creams using cocoa-butter as an ingredient.

There is some production of cocoa wine from cocoa juice, but there is little or no usage of the empty cocoa pod husk (as a live stock feed), or of the shells produced in secondary processing (as a live stock feed). Nor is there any production of potential derived products such as fatty acids, food colourings or tannins.

There is considerable institutional support for all sectors of the industry, which is defined in the report.

Cocoa and cocoa products contribute well over 80 per cent of the value of non-oil exports.

Government policies, introduced since adoption of the Structural Adjustment Programme (SAP) in 1986, which have had, are having and will have, a major impact on the Cocoa AFIS are: deregulation of marketing; encouragement of small and medium scale industry; stimulation of domestic fabrication of industrial plant and machinery to replace imported items; disinvestment of Government shares in industrial concerns, and, most recently in the 1990 budget, termination of exports of raw cocoa beans from January 1991. The last of these poses a very pressing problem in the light of: the shortfall in processing capacity in relation to crop production (90,000 m. tonnes even if the existing factories produce to their full notional capacity); the need to rehabilitate the existing factories; the limited time scale in which to develop a medium-scale factory to induce private entrepreneurs to invest in additional processing capacity, and; the need for comprehensive information on the international market for semi-processed cocoa products in the light of changing to export of these products instead of mainly raw cocoa beans.

The Integrated Development Programme recommended comprises six Technical Assistance Projects. There will be requirements for large capital investment, and for working capital, for rehabilitation of existing processing factories and for establishing additional processing capacity. However, reasonably precise quantification of the capital required will depend on studies recommended under the Technical Assistance programme, although some broad parameters are indicated.



The Technical Assistance Projects recommended are:

Project No.	Title	Cost to UNIDO US \$
No. 1.	Study of the market for cocoa butter, cake, powder and liquor in selected West and East European countries	53,000
No. 2.	Study of the market for cocoa-based consumer products in selected West African countries	30,000
No. 3.	Techno-economic feasibility study for rehabilitation of three existing cocoa processing factories	132,000
No. 4.	Provision of engineering and product quality assurance advice to RMRDC in development of a catalytic model cocoa processing factory	47,000
No. 5.	Techno-economic and locational feasibility study for new commercial medium-scale cocoa processing factories	55,500
No. 6.	Workshop on by-products and derived products of cocoa to determine present knowledge, to identify future opportunities and to evolve a Research and Development Programme	N.d.

## 1. PROGRAMME CONTEXT

### 1.1 The Cocoa Agro-Food Industrial System (AFIS)

The cocoa agro-food industrial system falls into five sectors: production including primary processing; procurement and primary marketing of raw beans; secondary processing, into cocoa butter, cake and powder; export and domestic marketing of raw beans and the secondary products, and; domestic processing and marketing of tertiary products, which are mainly cocoa-based beverages but include also some confectionery and cosmetic products. Chart I illustrates the Cocoa AFIS.

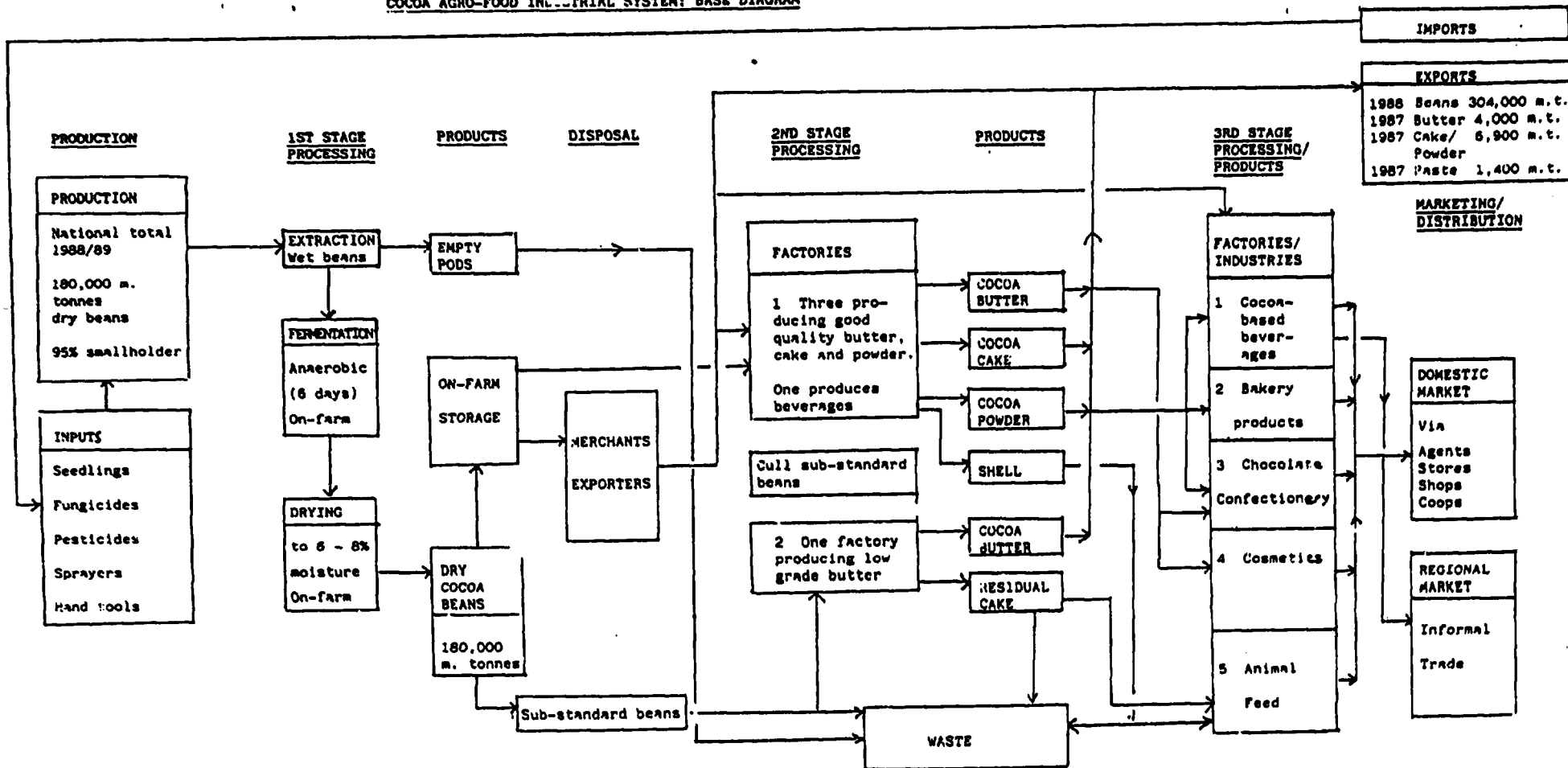
#### 1.1(a) Production and Primary Processing

Production is carried out almost entirely by smallholders whose holdings of cocoa average about 5 hectares. Many of the holdings have old trees, frequently 25 years or older, although particularly through the later 1970's and early 1980's there was a World Bank supported programme for rehabilitation and new planting. A further 4 year World Bank supported rehabilitation and replanting programme started in 1989 in some States under the Multi-State Agricultural Development Programme (MSADP) III.

FAO reports average yields of 382 kg of dry cocoa beans per hectare 1969-71, 256 kg 1977-79, 181 kg 1983-85 and 183 kg 1986-88. The Cocoa Research Institute of Nigeria (CRIN) states that yields of 1.0 to 1.5 m. tons per hectare are regularly achievable if improved varieties are planted at the correct spacing and high levels of crop husbandry are used, such as

CHART 1

COCOA AGRO-FOOD INDUSTRIAL SYSTEM: BASE DIAGRAM



<b>IMPORTS</b>
<b>EXPORTS</b>
1988 Beans 304,000 m.t.
1987 Butter 4,000 m.t.
1987 Cake/ Powder 6,900 m.t.
1987 Paste 1,400 m.t.

SERVICES

State Extension Services (supported by Federal Government and World Bank)  
CRIN

POLICIES

Stimulate production  
Enhance extension services  
Reduce subsidies

SERVICES

Produce Inspection  
CRIN

POLICIES

Deregulate marketing  
Cease exports raw beans from 1 January 1991

SERVICES

FIRO  
NMRDC  
NERFUND  
NIDB

POLICIES

Disinvest public sector equity  
Maximise commercialization of products and by-products  
Maximise domestic and regional market outlets  
Maximise local fabrication of factory plant and equipment

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maintenance of canopy cover, farm sanitation, and use of fertilizer and spray programmes against Black Rod (usually 9 sprays per season) and against Capsid (or Mirid) Bugs (usually 3 sprays per season). The low average yields reflect the ageing tree population of poorer varieties of many holdings and sub-optimal standards of husbandry, particularly limited use of fertilizer and chemical sprays. Many farmers only use chemical sprays when farm gate prices are high.

Primary processing is carried out by farmers. It consists of breaking the pods, extracting the wet beans and surrounding mucilage, fermenting the beans for 6 days and drying them. Fermenting is usually done in baskets or by heaping the beans, while the fermented beans are sun-dried. Tray fermentation, as developed by CRIN is relatively rare, as is artificial drying. Since deregulation of marketing and export farmers frequently store beans in sacks in their homes to await price rises.

#### 1.1(b) Procurement and Primary Marketing

Until deregulation of marketing in 1986, when the Cocoa Marketing Board was dissolved, the Board was the sole buyer and exporter. Buying companies were licensed and they set up a pyramidal structure with Licensed Buying Agents in the rural areas. With deregulation export of beans has been open to all and the companies participating have maintained the traditional pyramidal structure of rural buying agents. The processors of secondary and tertiary products buy some of their needs through the rural buyers (still termed Licensed Buying Agents), or appoint their own buying agents. Licensed Buying Agents are reported to pay a fee of Naira (N) 10,000 per season and a produce inspection fee of N 240 per m. tonne. Inspection is carried out by the State Ministries of Agriculture before export or sale to domestic processors.

#### 1.1(c) Secondary Processing

There are three factories producing secondary products (cocoa butter, cake, powder and potentially liquor) up to international trade standards. They are: Cocoa Industries Ltd. at Ikeja in Lagos State; Cocoa Products Industry (Nig) Ltd. at Ede, Oyo State; and Ile-Oluji Cocoa Processing Co. Ltd. at Ile-Oluji in Ondo State. They started operations respectively in 1967 and 1982 and 1984. All three produce cocoa butter, cake and powder; one, Cocoa Industries Ltd., also produces a cocoa-based beverage "Vitalo". The Ile-Oluji Processing Company is contemplating producing cocoa-based beverages but not for two to three years.

The three factories were set up under the former Western State and were all part of the ODUA Group of Companies. Each factory had at the outset a foreign shareholding contributed by European suppliers of plant, which involved providing the complete plant on a turnkey basis. The extent of present public sector shareholding varies between the factories but is declining or is due to decline, as the Federal Government's policy of disinvestment of public sector shareholdings is implemented. Further details of capital worth, equity holders, capacity and output is provided in Project No. 3. However, the three factories are hampered by two factors. Firstly, their equipment limits output levels because it is ageing, or certain elements are unsuitable or of insufficient capacity in relation to the rest of the factory and, secondly, all are beset by severe shortage of working capital. The latter factor has become such a severe constraint since deregulation of marketing that processors of tertiary products have been forced to buy raw beans and supply these to the three secondary processors for processing on a service basis.

There is a factory in Akure, Ondo State - Owena Mills - which processes low grade beans into cocoa butter for export. A screw-press is used, this together with the low quality of beans used results in a low grade butter, while the factory has generally been unable to sell the residual cake, for live stock feed or other purpose, and it is destroyed.

#### 1.1(d) Tertiary Processing

The leading company in this sector is Cadbury Nigeria Ltd. It has been a long-established manufacturer of cocoa-based beverages (Bournvita and Pronto), produces chocolate spread and has recently introduced the confectionery product, chocolate eclairs, into the domestic market. The second most important processor of cocoa-based products is Food Specialities (Nig) Ltd. which manufactures Choco-Milo and Nescao. There are believed to be several smaller processors in this sector of which two are Fan Milk Ltd. in Kano and Nigerian Cereals Processing Co. Ltd. at Kano.

There is also a cosmetics manufacturer, Continental Pharmaceuticals Group, which incorporates cocoa butter into a skin cream, having commercialised a process and formula developed by CRIN.

These companies market their products on the domestic market. Travellers have seen the products in other West African countries but such trade is carried out on an informal basis.

#### 1.1.1 Quantitative Performance of the Cocoa AFIS

Cocoa including secondary products (cocoa butter, cake and powder) is the leading export earner of all agricultural primary and processed products. As shown in Table 1 below it comprises well over 80 per cent by value of the agricultural products total.

Table 1

#### Nigerian Merchandise Export Trade

	1984	1985	1986	
				1000 US \$
A Total Merchandise Trade	79,578	89,731	130,521	
B Agricultural Products Total	63,443	72,749	107,722	
C Coffee/Tea/Cocoa*/Spices	56,199	64,952	96,525	
D C/B x 100 (per cent)	89	89	90	

Note \* Cocoa accounts for well over 90 per cent of the group total

Source: FAO Trade Yearbook 1987

Production of cocoa, in terms of raw beans, declined through the 1970's and until the mid-1980's due to neglect of the crop during the oil boom years in Nigeria. Table 2 shows production levels as published by FAO

Table 2

Production of Cocoa in Nigeria

	1000 m. tonnes			
1969-71 Average	261	1983	118	
1977	202	1984	150	
1978	160	1985	112	
1979	180	1986	100	
1980	155	1987	145	
1981	160	1988	140	
1982	150			

Source: FAO Production Yearbooks

An alternative source, the Cocoa Association of Nigeria (CAN), provides different production estimates, they are 1985/86 115,000 m. tonnes, 1986/87 115,000 m. tonnes, 1987/88 175,000 m. tonnes and 1988/89 180,000 m. tonnes (N.B. the first year stated corresponds to the calendar year used by FAO). The last of these figures is used in Chart I. Despite the discrepancy between the two sets of data the underlying trends are similar.

When the Nigerian Cocoa Board existed purchases of cocoa were disaggregated by States. The last available data, for the 1984/85 season, are shown in Table 3 below.

Table 3

Purchase of Cocoa by State 1984/85

State	Production m. tonnes	% of total	State	Production m. tonnes	% of total
Anambra	5	Neg	Kwara	965	0.6
Bendel	6,880	4.5	Ogun	3,272	2.2
Benue	30	Neg	Ondo	87,111	57.5
Cross River	4,935	3.2	Oyo	44,817	29.6
Gongola	19	Neg	Rivers	24	Neg
Imo	3,545	2.3	Total	15,603	100.00

Source: Annual Abstract of Statistics 1987. Federal Office of Statistics, Nigeria.

Thus Ondo and Oyo States contributed 87.1 per cent of the national total in 1984/85, followed a long way behind by Bendel, Cross Rivers, Imo and Ogun States none of which exceeded 4.5 per cent of the total. The dominance of Ondo and Oyo States is said to continue, with Ondo always contributing 50 to 60 per cent of the total.

At an earlier date, for example in 1979/80, while the combined share of Ondo and Oyo States was similar, at 85.2 per cent, three of the minor States - Cross Rivers, Imo and Bendel - claimed slightly larger shares at 4.3 per cent, 2.8 per cent and 3.4 per cent respectively. The decline in production in Cross Rivers State has been due to the heavy incidence of Black Pod in the wetter climate there over a period when use of fungicides was much neglected.

Exports of the primary product, raw beans, are shown in Table 4 below.

Table 4

Nigerian Exports of Raw Cocoa Beans

m. tonnes

1979	208,300	1984	108,500
1980	133,861	1985	92,891
1981	90,000	1986	148,425
1982	136,656	1987	143,516
1983	170,000	1988	303,942

Source: 1979 to 1985 FAO Trade Yearbooks  
1986 to 1988 Federal Office of Statistics, Nigeria.

Generally exports of raw beans have reflected the production trend line, though there have been some notable exceptions. The most dramatic divergence was in 1988 when recorded exports were almost 304,000 m. tonnes which was more than double the previous two years and almost 70 per cent above the CAN estimate of production. This figure of 304,000 m. tonnes is shown in Chart I. A number of factors could have contributed to this very high figure: (i) with deregulation of export marketing in 1986 farm gate prices (see Table 5) for beans rose dramatically and attained very high levels in 1988 which encouraged much better husbandry; (ii) farmers probably held over some 1987 production in anticipation of higher prices and certainly harvested the 1988 crop as early as possible to maximise their earnings; (iii) there was poorer culling of second grade beans, and; (iv) there may have been an inflow of cocoa from other West African producing countries in response to the high farm gate prices in Nigeria. In all events the high export figure in 1988 seems to have been out-of-line, as the first six months' figures for 1989 was 55,861 m. tonnes compared with 166,926 m. tonnes for the same period in 1988.

Table 5

Farm Gate Prices for Cocoa Beans

N per m. tonne			
1985	1,300	1988	12,000
1986	3,600	1989	8,000
1987	5,600		

Sources: 1985 Controlled Cocoa Marketing Board price  
1986-1989 Ministry of Agriculture Ondo State

Notes: (1) Prices went as high as N25,000 per m. tonne in 1988  
(2) Prices fell to N4,500 in December 1989 but recovered to N6,000 in late January 1990.

According to CAN the quantities of raw beans processed in Nigeria by the processors of secondary products were as in Table 6 in 1986 to 1989.

Table 6

Quantities of Cocoa Beans processed to Cocoa Butter, Cake and Powder

m. tonnes	
1986	25,000
1987	10,000
1988	10,000
1989	8,000

Source: CAN

The decline reflects the severe lack of working capital of the four companies concerned. Owena Mills processed only 200 m. tonnes out of a capacity of 3,900 m. tonnes, while the other three factories only processed around 8,000 m. tonnes out of a notional capacity of 30,000 m. tonnes each, or an aggregate of 90,000 m. tonnes (on 3 shift x 11 months working).

However the realistic aggregate capacity is probably little more than half the notional capacity, due to, in the case of Cocoa Industries Ltd. of ageing plant, and in the cases of Cocoa Products Industry (Nig) Ltd and the Ile Oluji Cocoa Processing Co. Ltd. both a shortfall of up to 40 per cent in capacity to proceed beyond cocoa liquor production (liquor is rarely wanted on international markets) and to equipment shortcomings either of design or deterioration.

Exports of cocoa butter, powder and cake and paste (liquor) are shown in Table 7 below.

Table 7

Nigerian Exports of Cocoa Butter, Cake and Powder and Paste

	m. tonnes		
	Cocoa Butter	Cocoa Cake and Powder	Cocoa Paste
1979	5,914	3,701	-
1980	8,125	8,800	-
1981	7,000	6,000	-
1982	10,461	6,960	500
1983	9,406	12,104	1,500
1984	7,050	7,275	1 200
1985	11,218	12,052	-
1986	8,947	14,453	2,774
1987	4,000	6,900	1,400

Source: FAO Trade Yearbooks.

Until 1981 Cocoa Industries Ltd. was the only operating processor, the increase in exports in 1982 reflects the addition of Cocoa Products Industry (Nig) Ltd. and in 1985 of Ile Oluji Cocoa Processing Co. Ltd. The turndown in 1986 and 1987 reflects the difficulties of the three processors on working capital and high farm gate prices following deregulation of export marketing. The recorded export figures throw some doubt on the processors' utilisation figures (see Table 6) since the conversion rate from beans to butter and cake or powder is:

1 tonne beans yields 380 kg of cocoa butter + 420 kg of cocoa cake or powder.

Thus by comparing Tables 6 and 7 for 1986 and 1987 either the utilisation estimates are low, or the export data too high. However, the trend line is correct.

Information provided indicates that two companies - Cadbury Nigeria Ltd. and Food Specialities (Nig) Ltd. account for about 95 per cent of cocoa processed into tertiary food and beverage products. The combined production of the whole sector uses about 2,750 m. tonnes of cocoa powder p.a. or the equivalent of about 6,600 m. tonnes of raw beans. Domestic demand for the products has been stationary since 1985, due to high domestic inflation associated with the Structural Adjustment Programme (SAP). Domestic demand for cocoa butter is small, a little is used for chocolate manufacture and some in the cosmetics industry; consumption is estimated at 100 m. tonnes p.a.

As noted earlier Nigerian produced tertiary products are seen in other West African markets, but the trade is informal and not quantified.

### 1.2 Importance of the Cocoa AFIS in Nigeria's Economy

One objective of SAP, which was commenced in June 1986, is to promote and increase exports to maximise foreign exchange earnings, and another is to enhance the non-oil share of exports.



As already seen - see Table 1 - exports of cocoa and cocoa products contribute well over 80 per cent by value of total agricultural exports. However, cocoa has the potential to contribute to a much greater degree to national recovery. Yields, which averaged 183 kg per hectare in 1986-88, are less than 20 per cent of attainable yields of 1 m. tonne or more per hectare. Even a doubling of yields, to the levels of the late 1970's, would provide Nigeria with the opportunity to dramatically increase exports. Clearly the revenue earned for exports will depend on world market prices - at present these prices are badly depressed being around US \$ 1190 per m. tonne of beans compared with double that value in 1988. Nevertheless, there is an established resource in the cocoa crop, which is estimated by FAO as 700,000 hectares. The cocoa crop forms the major economic activity and source of revenue for an estimated 150,000 farmers and their families. Current processing activities at the secondary product level provides employment for an estimated 2,000 people, while tertiary processing, distribution and sales of products provides further employment for an unquantified number of employees and operatives.

There is also potential opportunity for enhancing the value of the crop by utilising or developing by-products which are as yet largely wasted. This subject is expanded in Section 2.1.2 and in Project No. 6.

### 1.3 Government Development Objectives and Policies relating to the Cocoa AFIS

On the production side Government's objective is to stimulate agricultural production. Support is being provided by the World Bank and the assistance is structured under Multi-State Agricultural Development Programme (MSADP's). MSADP's relate to groups of States which have similarities. The main thrust of the MSADP's nationwide is to stimulate production of food crops and thus to reverse the growing dependence which has occurred on food imports. However, one MSADP - MSADP III, which covers Lagos, Oyo, Ondo and Rivers States - has a specific Tree Crop component. Details are given in Section 1.4.1 below. The main thrust of these MSADP's is to improve the extension services by selecting subject matter specialists, by structuring the service and by support in terms of training and logistics such as transport. With Tree Crops there is also a component to provide seedlings, in the case of cocoa for rehabilitation and new planting. The Government, with World Bank support, also operates a fertilizer purchase and distribution scheme. In 1990 there will be a loan of US \$ 120 million to support the fertilizer scheme; sale prices for fertilizer are heavily subsidised, reportedly the real cost of a 50 kg bag of fertilizer is N.140, with the sale price in 1990 being N.20. However, the level of the subsidy has been reduced from 1989 when the sale price was N.15. The reducing level of subsidy is consistent with the Government's policy to reduce or phase out subsidies as possible and appropriate.

On the marketing side for cocoa the Government's objective, with SAP, was to deregulate marketing. Thus in 1986 the former Cocoa Marketing Board was disbanded and private companies undertook export marketing. A very important objective and related policy change was declared in the Budget speech in January 1990. In relation to cocoa the Government's objective is to maximise value added to the crop and it has decreed that as from January 1991 no further exports will be made of raw beans. All cocoa exports should be of semi-processed products (cocoa butter, cake and powder) or of consumer goods (beverages, confectionery etc.).

On the processing side, Government's objective and related policy have been published ("Industrial Policy of Nigeria Federal Ministry of Industries 1988). The policy objectives stated were:

"The objective of government industrial policy shall be to achieve an accelerated pace of industrial development. In this regard, the industrial sector would become the prime mover of the economy."

The elements of this objective include:

- "(a) Providing greater employment opportunities
- (b) Increased export of manufactured goods
- (c) Dispersal of industries
- (d) Improving the technological skills and capability available in the country
- (e) Increased local content of industrial output
- (f) Attracting foreign capital, and
- (g) Increased private sector participation in the manufacturing sector."

Strategies and policy measures were defined as below:

- "(a) encouraging increased private sector participation in the industrial sector, and privatising and commercialising holdings in certain existing industrial enterprises
- (b) playing a catalytic role in establishing new core industries
- (c) providing and improving infrastructural facilities
- (d) improving the regulatory environment
- (e) improving the investment climate prevailing in the country
- (f) establishing a clear set of industrial policies, and
- (g) harmonising industrial policies at Federal, State and Local Government levels."

A major thrust of the industrial policy in the document quoted above is that development of small and medium-sized industries would be prioritised. At the time of publication of the document "small scale" industries were defined as those with capital investment needs including working capital but excluding the value of land, of between N.100,000 and N.2,000,000. Finally, following SAP, the Government modified the regulations regarding foreign equity participation in Nigerian enterprises in order to encourage inflow of foreign capital. With cocoa processing enterprises it would be possible for 100 per cent of the equity to be held by a foreign investor.

#### 1.4 On-going Development Activities in the Cocoa AFIS

##### 1.4.1 The Production Sector

As noted in Section 1.3, MSADP's are development programmes jointly funded by the Federal and State Governments and the World Bank. They are 4-year programmes which commenced in 1989, although negotiations are still on-going as regards detail and loan disbursement. MSADP III, the project covering Lagos, Oyo, Ondo and Rivers States, is the only one which specifically provides financing for tree crops. The World Bank Staff Appraisal Report (SAR) states that the main tree crops catered for are cocoa, oil palm, and plantain; others of local significance are citrus, coconut, coffee, rafia palm, pineapple, cashew, cola nut and mango. Cocoa is the major tree crop supported in Oyo and Ondo States, while in Lagos State the major tree crop supported is coconut, and in Rivers State the crops supported are oil palm and plantain.

A main plank of the MSADP's is to enhance the extension services by developing extension workers as Subject Matter Specialists - key expertises are agronomy, plant protection and agricultural extension. In Ondo State there is a specific post for a Zonal Cocoa Development Officer, which reflects the importance of cocoa in Ondo State. Support to the extension workers in terms of transport and other services is a crucial input, and there is a significant allocation for Manpower Development and Training - which is additional to the specific allocation for tree crops. Within the tree crop allocation seedling nurseries are strongly supported. Over the four year project period the project is expected to result in rehabilitation of 57,250 hectares of cocoa (half each in Oyo and Ondo States) and, under conservative estimates new cocoa plantings of 2,204 hectares.

Table 8 below shows the total MSADP III budget for Oyo and Ondo States (where cocoa is prioritised), and the allocations for tree crops and manpower development and training.

Table 8

Selected Budget Provisions under MSADP III

	Naira '000					
	Ondo State			Oyo State		
	Local	Foreign	Total	Local	Foreign	Total
Total Project Costs of which	79,119.6	131,954.6	211,074.1	85,451.6	138,848.4	224,299.9
Tree Crops	2,130.2	2,288.9	4,319.1	10,147.3	3,384.9	13,632.3
Manpower Development and Training	973.7	1,148.9	2,122.5	728.6	997.1	1,725.7

Source: World Bank Staff Appraisal Report, February 1989.

Other areas catered for in the MSADP's include: management and administration; monitoring and evaluation; finance and accounts; research, extension and seed multiplication; infrastructure; input supply and agro-processing (at farm level), and; fisheries.

A feasibility study, No. NIR/88/008/A/01/57 funded by the United Nations Development Programme (UNDP) and costing US \$ 100,000, is being carried out by the International Finance Corporation (IFC), the affiliate of the World Bank. It is assessing the viability of a proposed coffee and cocoa expansion and diversification project by the Aden River Estate Ltd. in Bendel State with a view to IFC loan assistance. This would be a plantation scale enterprise and would include 1,000 hectares of cocoa. The original implementation period was 1989-93, though there has already been some slippage. The consultants' feasibility study report is awaited.

Finally, on agricultural on-going or pipeline projects, a feasibility study carried out by a company, SOCA 2, for potential development of cocoa in Ondo State was sighted. The original aim was development of twelve 500 hectares industrial cocoa estates. In the event the consultants were unable to identify twelve areas of 500 hectares each, which illustrates that land pressure generally precludes larger contiguous areas for cocoa. The consultants ultimately formulated a project for a 900 hectare rehabilitation of an existing, run down, public sector estate at Oda and for a further new estate of 300 hectares at Ute. Unfortunately, despite enquiries made, it was not possible to establish whether this project proposal is likely to be implemented.

Enquiries to the European Communities and to FAO indicated that neither has on-going or pipeline projects supporting agricultural production of cocoa.

#### 1.4.2 The Processing Sector

##### Semi-processed products

Given the Government decree that exports of raw cocoa beans shall cease from January 1991, the limited existing secondary processing capacity (90,000 m. tonnes p.a. notional, but about 40-50,000 m. tonnes actual) and the present level of production of 180,000 m. tonnes of raw beans, there is a serious shortfall in processing capacity. This subject is discussed further in Section 2.1. However, the Raw Materials Research and Development Council (RMRDC) aims to set up a catalytic model processing facility. The aim is that the factory will be of medium scale (say 10,000 m. tonnes capacity), it will maximise use of locally fabricated plant and minimise use of imported plant, it will probably rely more on manual movement between key processes in the factory than on mechanised movement (e.g. conveyors) and that the factory set up will be a model which private entrepreneurs can copy thus providing the additional processing capacity which Nigeria needs. Initial discussions were held between RMRDC and interested parties in Ondo State (Ministries of Agriculture and Industry, investors etc.) in January 1990. RMRDC has also called for tenders from machinery manufacturers to fabricate and supply appropriate plant; the closing date for tendering was 15 February 1990 (after the consultant left Nigeria).

A representative of the European Communities advised that the Community could have interest in supporting additional processing capacity under the Lome IV agreement, though this interest probably concerns assistance with financing rather than Research and Development.

##### By-products

CRIN advised that the Institute, in collaboration with the Faculties of Agriculture at Ibadan and Ife Universities, had been investigating the value of dried and ground empty cocoa pod husks as a replacement for carbohydrate fractions (cereals) in livestock feed. Replacement, weight for weight, of between 17 and 22 per cent of the cereal content appears to be feasible from the nutrition stand point - above that level toxicity occurs due to the theobromine content of the husks; however, the findings have not yet been commercialised.

## 1.5 Institutional Framework for Development of the Cocoa AFIS

### 1.5.1 At Production Level

#### Federal Ministry of Agriculture and Rural Development

This Ministry is responsible for overall development planning and direction of agricultural policy, working in close collaboration with State Ministries of Agriculture. There is a special unit - the Monitoring and Evaluation Unit, at Benin City - which monitors tree crop projects. The Federal Government provides a large part of the financing for State Ministries.

#### State Ministries of Agriculture

These Ministries are responsible for control of agricultural activities in their States. For example, at operational level for the World Bank supported by MSADP's the link is between the World Bank representatives and the State Ministries, particularly the extension services. The Ministries are also responsible for produce inspection.

#### Cocoa Research Institute of Nigeria (CRIN)

CRIN is located in Ibadan. It is concerned with kola, cashew, coffee and tea as well as cocoa. It has six sub-sections. On cocoa the listed projects on production in 1986 (last Annual Report available) were: weed studies and control; evaluation of pesticides; development of improved techniques for cocoa rehabilitation, and; cocoa improvement and propagation. It also had post-production projects on: wine (cocoa and kola); improvement of thermo-resistant properties of chocolate products and; collection of base-line data to facilitate operation of cocoa central fermentaries. Breeding and selection of improved cocoa varieties and distribution of proven varieties, as under the last of the production projects listed, is a priority area.

#### World Bank

The World Bank is closely involved with the Federal and State Ministries of Agriculture on implementation of the MSADP's - see also Section 1.4.1.

### 1.5.2 At Commerce and Marketing Level

#### Federal and State Ministries of Commerce, and/or Trade

These Ministries are responsible for trade and commerce matters. For example, a representative of the Federal Ministry attended a seminar in Moscow in late 1989 at which there were participants from East European users of cocoa and of West African producers. The aim was to develop mutually acceptable trading arrangements, which centred on East European investment in payment for cocoa, and/or barter arrangements.

The Nigerian Export Promotion Council (NEPC) is a unit of the Federal Ministry of Commerce. It is charged with spearheading the export drive for non-oil commodities. It has some 200 professional staff; its offices overseas include London, New York, Abidjan, Jeddah and Brussels.

### Cocoa Association of Nigeria (CAN)

CAN was established in November 1986 following the closing down of the Cocoa Marketing Board, and is located in Akure, Ondo State. It has 180 members, of which five are processors (the three secondary processors, Cadbury Nigeria and Food Specialities) and the remainder are traders (primary buyers of cocoa beans and exporters). There are no producer members. It provides its members with market intelligence information and aims to represent its members' interests to Government and other relevant parties.

#### 1.5.3 At Processing Level

##### Federal and State Ministries of Industry

Are responsible for industrial matters in their respective areas, in terms of formulating policy and directing implementation.

The Nigerian Institute of Social and Economic Research is an institution within the Federal Ministry of Industry. It incorporates an Industrial Consultancy Department and it provided a research report which contributed to the Government's decision to ban exports of raw cocoa beans from January 1991.

##### Federal Institute of Industrial Research, Oshodi (FIIRO)

FIIRO is an institute within the Federal Ministry of Science and Technology. Quoting from "FIIRO Today" its objective is "The goal of the Institute as set out in its founding document is to assist and accelerate the industrialisation of the Nigerian economy by carrying out a defined set of activities. Today the objective remains the same although the emphasis now is more on food fabrication and production of equipment so as to enhance the application and commercialisation of new inventions". Its involvement with cocoa has been limited, although it developed a process for use of cocoa butter in skin creams which has been commercialised by the Continental Pharmaceutical Group.

##### Raw Materials Research and Development Council (RMRDC)

RMRDC was inaugurated in February 1988. Its mandate is:

- (a) To draw up policy guidelines and action programmes on raw materials acquisition, exploitation and development;
- (b) To review from time to time raw material resources availability and utilization with a view to advising the Federal Military Government on the strategic implication of depletion, conservation of stock-piling of such resources;
- (c) To advise on adaption of machinery and processes for raw material utilization;
- (d) To encourage publicity of research findings and other information relevant to local sourcing of industries;
- (e) To encourage growth of implant research and development capabilities;

- (f) to advise on and devise awards or systems for industries that achieve any break-through or make innovations and inventions;
- (g) To organise workshop, symposia and seminars from time to time designed to enlighten people on new developments and solutions discovered;
- (h) To consider and advise on special research grants for specific objectives of the Council.

As regards cocoa, reference has been made - Section 1.4.2 - to its priority work on setting up a catalytic model factory.

#### Association of Food, Beverage and Tobacco Employers (AFBTE)

The role of AFBTE is defined in the following extract from its ten-year anniversary brochure:

"AFBTE is an employers' organisation registered under the Trade Unions (Amendment) Decree, No. 22 of 1978. Membership is open to companies that are manufacturers of food, beverage and tobacco products and that employ a minimum of ten workers.

AFBTE is responsible for negotiating (on behalf of its members) collective agreements covering salaries and wages, the major fringe benefits, hours of work and other conditions of service with the National Union of Food, Beverage and Tobacco Employees (for junior staff) and the Food, Beverage and Tobacco Senior Staff Association. In addition to assisting in resolving industrial conflicts, AFBTE also provides research and advisory services to its member-companies. It is a main rallying point for its members in dealing with external threats to the Food, Beverage and Tobacco Sector of the Nigerian economy".

It has seventy-seven members, including all major processors of secondary and tertiary cocoa products. It has close links with other industry associations: Manufacturers' Association of Nigeria (MAN); Nigeria Employers' Consultative Association (NECA); Food, Beverage and Tobacco Senior Staff Association (FCBTOS), and; National Union of Food, Beverage and Tobacco Employees (NUFBTE).

#### 1.5.4 Financing Institutions

Commercial Banks will finance agricultural and industrial activities and development, but interest rates are high, at 30+ per cent.

#### National Economic Reconstruction Fund (NERFUND)

This fund was established by the Federal Government in January 1989. It is directed towards small and medium sized industry (including agro-processing) for which the fixed assets (excluding land) do not exceed N 10 million. A Monitoring Office has been set-up in the Ministry of Finance and Economic Development, while the Central Bank of Nigeria is the apex institution and disbursement is through commercial banks. Initial funds were: Federal Government N 200 million, Central Bank of Nigeria N 100 million, while further funds were expected from institutions such as the World Bank, the African Development Bank and commercial sources.

### **Nigerian Industrial Development Bank (NIDB)**

This bank has three lines of credit: the African Development Bank; the European Investment Bank, and; local sources. Interest rates are 16 per cent for foreign loans and 24 per cent for Naira loans.

### **International Finance Corporation (IFC)**

This affiliate of the World Bank is represented in Nigeria, and is willing to make loans to viable enterprises. Interest rates are 2.5 per cent over the rate at which IFC borrows funds (which vary by source). IFC rarely invests more than 30 per cent of total project capital requirements; it usually offers a 2 to 3 year grace period and requires repayment over 5 to 6 years.

### **State Financing Institutions**

There are State Financing Institutions, for example the Ondo State Investment (Holdings) Co. Ltd.

### **Economic and Development Policy and Monitoring**

#### **Federal Ministry of Finance and Economic Development**

The Economic Affairs Division is responsible for co-ordinating Aid matters and funds.



## 2. PROGRAMME JUSTIFICATION

### 2.1 Bottlenecks and Constraints in the Cocoa AFIS

#### 2.1.1 Production

As already seen, Section 1.1.1, cocoa production fell progressively through the 1970's and early 1980's during the oil boom period. However, the World Bank supported a replanting and rehabilitation programme in four states - Ondo, Oyo, Ogun and latterly Bendel - in the period 1971 to 1981 - under schemes known as Cocoa 1 and Cocoa 2. Farmers were provided with cash loans and inputs (seedlings, fertilizer and chemicals). Table 9 below shows the target areas and achievements for the projects.

Table 9

#### Cocoa Development Projects 1972-81

	Hectares			
	Oyo State	Ondo State	Ogun State	Bendel State
Target Area	34,370	25,635	15,355	4,100
Achievement	41,012	37,150	13,465	4,164
Total Target	70,496			
Total Achievement	95,791			

Source: Monitoring and Evaluation Unit, Federal Ministry of Agriculture Progress Report 1981.

The MSADP III programme, supported by the World Bank, which is now taking off foresees the replanting and/or rehabilitation of some 57,500 hectares of cocoa. Taking into account both Cocoa 1 and 2 and MSADP III the aggregate area represents some 22 per cent of the total area. Furthermore, the Federal and State Governments have supported additional replanting and/or rehabilitation in the period 1981 to 1989.

Further inputs into production are not recommended by the consultant because:

- (i) cocoa 1 and 2 and MSADP III have covered a significant proportion of crop.
- (ii) there is much latent potential for yield and production increases based on the existing crop which will be quite rapidly realised if farmers deem their farm gate prices to be encouraging. As the level of farm gate prices is determined by world market commodity prices, and are badly depressed at present, the justification for further stimulation of area is doubtful.

- (iii) it is extremely doubtful that the existing Government counterpart services, notably of agricultural extension, have the capacity to absorb and utilise further flows of Aid.
- (iv) it is probably unlikely that the Government would wish to accept a further increment to its debt burden in the cocoa agricultural production sector.

### 2.1.2 Marketing

Two aspects need particular attention. Firstly, the implications of the Government's decree that from January 1991 only processed and semi-processed cocoa products should be exported. Secondly, the view that much more cocoa should be processed into consumer products for domestic consumption (or for export particularly to the region) - production and marketing of such products is seen as a way to isolate Nigeria from the excesses of fluctuations in world prices for the primary and semi-processed products.

#### Cessation of exports of raw cocoa beans (the primary product)

The time frame from Government's announcement of the ban on cocoa bean exports and its effective date (January 1991) is extremely short to fill the gap in processing capacity which currently exists. A Lagos based commodity brokerage company was reported, in "The Financial Post Vol. 2 No. 12 1990", as suggesting that Government deals with the likely interim problem of a short fall in processing capacity by continuing to allow exports of beans in the short term, but to require exporters to provide a certain percentage of their purchases for processing. It is understood that CAN is making similar recommendations. However, given the decree, the consultant makes no recommendations on marketing of raw beans, since the trade should be phased out in a relatively short period.

Very important, however, are the changes which exportation of semi-processed products will cause. To date, even in years of high production of cocoa butter, cake and powder the proportion of Nigeria's crop so exported did not exceed some 20 to 25 per cent of the crop. The aim of seeking value added is excellent but this radical change in export policy has potential problems:

(i) the need to produce cocoa butter, cake and powder fully up to international standards; (ii) realisation that cocoa liquor has a minimal demand on international markets; (iii) realisation that exports of the semi-processed products may cause some resistance from international buyers and it is essential to seek the most responsive and appropriate buyers; (iv) decision as to whether cake or powder is the better product to market internationally, and (v) realisation that prices for cocoa butter, cake and powder, while providing value added are nevertheless generally in a strict proportion to ruling prices for dry cocoa beans - cocoa butter is generally 2.2 to 2.3 times the price of beans and cake about 0.7 of the price, weight for weight.

A constraint therefore exists on existing knowledge of the markets for semi-processed products, which is addressed by a proposal for a structured market study - see Section 3.3 and Project No. 1.

Increased Production of Cocoa-based Consumer Products for the Domestic and Regional Markets

This aim has considerable merit but the extreme view that all cocoa could be processed for local and regional consumption is improbable. Nigeria, the most populous country in Africa with over 100 million inhabitants at present, consumes only about 2750 m. tonnes of cocoa powder p.a. (equivalent to 6600 m. tonnes of beans) and demand is stagnating due to inflation and lack of purchasing power - much the same constraints impact on other regional markets, which have much smaller populations. Consumption of cocoa butter is estimated at only 100 m. tonnes (equivalent to 250 m. tonnes of beans). By way of comparison the aggregate imports of raw beans by West Germany, the U.K. and France in 1987 was 367,000 m. tonnes and their combined population was some 170 million; given the highly developed confectionery industries and markets in these countries, Nigeria could not quickly expect to attain similar levels of consumption.

Nevertheless, there is merit in investigating regional markets for consumer products; this is the subject of a proposal - see Section 3.3 and Project No. 2.

### 2.1.3 Processing

#### Secondary Processing

Constraints on secondary processing to cocoa butter, cake and powder are the most serious in the cocoa AFIS and have been exacerbated by the Government's decree prohibiting exports of raw beans from January 1991.

As already seen the notional capacity of the three factories (at Ikeja, Ede and Ole Oluji) is 90,000 m. tonnes p.a., but realistically is around 45,000 m. tonnes; it is estimated by the companies concerned that their aggregate capital requirements for rehabilitation is around N.120 to N.160 million (US \$ 15.4 to US \$ 20.5 million at the current official exchange rate). Each company advised that application had been or would be made to ADB for funds, but the outcome is not known. These three companies also suffer from an acute shortage of working capital which has caused them to operate at well below their present realistic capacity, that is in 1990 each company has estimated a working capital need, of from N.20 to N.65 million. N.40 million would allow for purchase of some 5,000 m. tonnes of raw cocoa beans at present producer prices and for direct processing costs for about 3 months.

Borrowing from commercial banks at reigning interest rates (30+ per cent) renders the cost of borrowing from such sources exorbitant; the companies are variously considering seeking further equity from their shareholders and/or selling of Government held equity, which is consistent with Government policy, to raise working capital. However, the extent to which these potential measures will address the problem is unclear at present.

Taking into account the need to purchase, ship, install and commission equipment for rehabilitation a realistic time frame is not less than six months from securing a fixed capital loan. Assuming that securing loans is possible and that working capital is also secured the aggregate notional capacity will then be only 90,000 m. tonnes of beans per annum - about half of estimated production.

Therefore a gap remains in processing capacity for some 90,000 m. tonnes of beans p.a. It was estimated ("The Financial Post Vol. 2 No. 12 1990") that the capital cost of a new processing factory of similar capacity and constructed from all imported plant would be about N.200 million (US \$ 26

million at the current exchange rate). A very recent quote from the German company, Baumeister, stated that the fob cost for plant for a 10,000 raw bean p.a. capacity factory on a turn key operation, would be Deutchmark 7.35 million (equivalent to N.30 million, or US \$ 4 million). Taking into account cif costs, buildings, services, commissioning etc. the capital cost of a new 10,000 m. tonnes of beans capacity based on importing all plant could be N.80 million +.

This very high capital cost, and the very desirable aim to develop Nigeria's equipment fabrication capability, lends great importance to the RMRDC's proposal to construct a catalytic model factory. The presently projected capacity of 10,000 m. tonnes of beans p.a. is determined by the output of the hydraulic pot press which, it is generally considered, should be imported. Other items of plant, e.g. the winnower, may also need to be imported; however, the aim is to minimise the imported equipment content. It is understood that the Ondo State Government and other interested parties in Ondo State will provide the land and services, while RMRDC has funds for the remaining capital requirements, assuming the tenders from Nigerian equipment manufacturers (see Section 1.4.2) are reasonable. However, there are three factors which arise from the RMRDC catalytic model factory project in relation to the time frame for terminating export of dry beans:

- (i) it is unlikely that the RMRDC plant would be operable before September 1990 at the earliest. Thus time is tight, with the 1990 main crop starting then, to operate the plant and to convince private entrepreneurs to finance and build similar factories to deal with the 1991 crop.
- (ii) the RMRDC factory, together with existing capacity in the three established factories will fall short of the production level by some 80,000 m. tonnes.
- (iii) the RMRDC factory could conceivably encounter some teething problems, either with regard to engineering or product quality, the resolution of which could delay the point at which private sector investors would be willing to simulate the model.

There is a further minor processing capacity, with Owena Mills Akure, with a notional capacity of nearly 4,000 m. tonnes p.a., though for low quality beans and product.

The consultant was unable, due to absence of key staff and recent management changes, satisfactorily to assess the situation. However, the impression gained was that this factory has very little to contribute, it produces a low quality cocoa butter, uses a screw press which is not favoured, has received very poor prices for its product and has working capital problems. The Ondo State Investment Holding Company, the main shareholder, is considering the company's future and conversion to a factory for extracting vegetable oils was mentioned.

#### By-products and Derived products

##### By-products

Chart 1 shows that three substances derived or derivable from cocoa largely or wholly go to waste at present. They are:

- (i) the empty husk. This when dried and ground could be a useful replacement for cereals in livestock feed. There are clearly problems with regard to inducing farmers to dry the pods, with the logistics of delivery or collection of the dried pods and with feeding stuffs manufacturers' willingness to use the product.

However, the potential production is 30,000 m. tonnes which would provide a significant increment to the value of the crop, and would free cereals for human consumption.

- (ii) Juice (which drains from the wet beans). Some is already used for wine making, but the indications are that the majority is wasted.
- (iii) Shells produced by the three main processors (and cake produced by Owena Mills). Although some of these by-products have been sold in the past for livestock feed the majority has been destroyed or carted away (for which there has been a charge).

#### Derived products

Representatives of FIIRO suggested that various products could be derived from cocoa or its semi-processed products, citing: (i) fatty acids from the cocoa butter which will be increasingly demanded as the food manufacturing industry develops; (ii) food colourings, and (iii) tannins.

At present such products are not produced.

### 3. INTEGRATED DEVELOPMENT PROGRAMME

#### 3.1 Programme Objectives

- (a) To provide comprehensive information on the international market for semi-processed cocoa products (cocoa butter, cake and powder) in order that Nigeria may maximise the advantage of changing from exporting principally raw cocoa beans to exporting principally these semi-processed products. Also to identify potential joint venture partners for Nigerian processors.
- (b) To provide comprehensive information on the market for cocoa-based consumer products in selected regional markets to enable processors to penetrate such markets and to lessen Nigeria's reliance on international markets and to enhance value-added.
- (c) To assess in full detail the techno-economic needs of existing factories producing semi-processed cocoa products to assist these companies in determining and seeking finance for rehabilitation programmes and in improving the efficiency and profitability of these enterprises.
- (d) To assist the RMRDC, if required, in possible technological problems which may arise in setting up a catalytic model cocoa factory for producing semi-processed products.
- (e) To assist the relevant authorities in assessing the techno-economic viability of medium scale factories (based on the RMRDC catalytic model) for the production of semi-processed cocoa products, with a view to encouraging entrepreneurs and investors.
- (f) To enhance the value of the cocoa crop by supporting a workshop structured to review the present situation and future potential with regard to use of by-products and derived products.

The combined impact of this proposed programme supports two aspects which are paramount in present policies and thinking. These aspects are: to increase value-added by only exporting semi and fully processed cocoa products, and; to maximise the present value of the crop by developing uses for items which are presently partly or wholly wasted.

#### 3.2 Policy Measures

This study of the Cocoa AFIS was undertaken at a time only four years after the introduction of the SAP and within one month of the Government's decree prohibiting export of raw cocoa beans from January 1991. Thus the basic policies have already been determined and the Integrated Development Programme proposed has been formulated with the existing policies in mind. It should be noted that the impact and implementation of the policies are in several areas transitional, thus there may need to be modifications to the proposed programme depending on the speed of progress on implementation of policies. Policies which have the greatest bearing on the proposed programme are:

- (i) deregulation of marketing
- (ii) disinvestment of public sector equity in business and industry
- (iii) encouragement of small and medium sized industry
- (iv) prioritisation of development of plant and machinery manufacture in Nigeria
- (v) cessation of export of raw cocoa beans as from January 1991.

### 3.3 Technical Assistance Projects and Timing

The Technical Assistance Projects recommended are:

1. Study of the market for cocoa butter, cake, powder and liquor in selected West and East European markets.
2. Study of the market for cocoa-based consumer products in selected West African countries.
3. Techno-economic feasibility study for rehabilitation of the three existing cocoa processing factories - Cocoa Industries Ltd., the Ile Oluji Cocoa Processing Co. Ltd. and Cocoa Products Industry (Nig) Ltd.
4. Provision of engineering and product quality assurance advice to RMRDC in development of a catalytic model cocoa processing factory.
5. Techno-economic and locational feasibility study for new commercial medium-scale cocoa processing factories.
6. Support to a workshop structured to (a) define the present knowledge which exists in Nigeria on production and utilisation of by-products and derived products and (b) plan programmes for appropriate Research and Development.

Although six separate projects are listed it is recommended that three, Nos. 1, 3 and 5 are sub-contracted to one consultancy company as they are inter-linked and this would be the most cost-effective arrangement, even though it may not be possible to carry out field work on Nos. 3 and 5 in one visit for reasons given in the project document for No. 5. No. 1: the European market study for semi-processed cocoa products, while standing on its own, is also an integral part of projects 3 and 5. It will, in fact, be necessary under project No. 3 to prepare three reports, one for each factory, though there will be aspects common to each report, e.g. market aspects.

With regard to the two market study projects, Nos. 1 and 2, it should be noted that the International Trade Centre UNCTAD/GATT (ITC) is doing, or formerly proposed work in the area. ITC has an on-going project - "Promotion of commerce-orientated production and trade development in ECOWAS" No. RAF/37/05. This project includes ten commodity studies but only one for timber, veneer and plywood is yet scheduled. Furthermore, the scope of this project is within ECOWAS countries only, whereas Project No. 2 extends to other countries. ITC also proposed a project "Export Diversification and Promotion" to start in 1987. This included, as a main thrust, a study of the

market for and marketing of cocoa in Europe and thus potentially impinges on Project No. 1. However, so far as could be ascertained the project proposal was not proceeded with and the change to export of only processed products alters the complexion of the market study now needed.

Timing of the proposed projects is suggested as follows:

Project No. 1 - as soon as possible in 1990, so that exporters may benefit from the knowledge by the time that the change over to export of processed products is implemented, and so that the findings can be incorporated into Projects 3 and 5.

Project No. 2 - is not so urgent and the first half of 1991 is recommended.

Project No. 3 - should be an early priority in 1990. For this reason funding of the consultants under SIS management is recommended.

Project No. 4 - while this is urgent it cannot be mounted until RMRDC has set up its catalytic model factory, hence early to mid 1991 is recommended.

Project No. 5 - while this also is urgent, it is constrained by the same consideration as Project No. 4, hence the timing recommended is the first half of 1991.

Project No. 6 - while the urgency is not great, a timing of late 1990/early 1991 would be appropriate.

#### 3.4 Investment Projects

No recommendations have been made for investment projects. This is because:

- (i) the three companies processing cocoa to cocoa butter, cake and powder have already made or expect to make application to the ADB for loans, the outcome and hence the extent of outstanding capital need is yet unknown. Furthermore, it is likely that to bring the factories to tip top condition will require additional capital which can only be fully assessed from the full techno-economic feasibility study proposed.
- (ii) the level of capital investment needs for filling the gap in existing processing capacity (after rehabilitation of existing factories), which is of the order of 90,000 m. tonnes of beans intake, will not be assessable until the RMRDC has completed its work on the catalytic model factory.
- (iii) the investment needs for Research and Development in the by-product and derived product area will not be known until after the deliberations of the recommended workshop.

Despite these uncertainties the capital needs are substantial. Indications are that the existing factories need at least N.120 to 160 million for rehabilitation and a further N.120 million as working capital. The new factories would require some N.700 million to provide 90,000 m. tonnes additional capacity should their costs be similar, pro rata, to the type of factories presently in Nigeria; however, it is hoped that their cost, based on the catalytic model, will be considerably lower. These new factories



would, however, require, in aggregate some N.200 million as working capital at present farm gate prices for cocoa. It is impossible at this juncture to hazard a guess on the costs of an R & D programme for by-products and derived products.

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION

PROJECT DOCUMENT

COUNTRY: Nigeria

PROPOSED TITLE: Study of the market for cocoa butter, cake, powder and liquor in selected West and East European countries.

PROJECT NUMBER: No. 1.

ESTIMATED DURATION: 4 months

UNIDO CONTRIBUTION: US \$ 53,000

GOVERNMENT CONTRIBUTION: Provision of a counterpart - by NEPC

POSSIBLE TIMING: As soon as possible in 1990

### Background and Justification

The Government of Nigeria has decreed that raw cocoa beans shall not be exported from January 1991. The principal commodities exported in the short and medium term (assuming Nigeria can install the additional plant required) will be the semi-processed products - cocoa butter, cake, powder and liquor - as the export market for consumer products (particularly confectionery and beverages) is very competitive.

The policy shift to exportation of semi-processed products is based on the value added for these products and creation of employment in Nigeria. Value added can be assessed as below.

1 m. tonne of raw cocoa beans - yields - 380 kg of cocoa butter +  
420 kg of cocoa cake or powder  
Value of cocoa butter = 2.3 x value of raw beans  
and  
Value of cocoa cake = 0.7 x value of raw beans  
Cost of processing 1 m. tonne of cocoa beans to butter and cake = US \$ 130

Example (at current cif prices for raw cocoa beans)

Value of 1 m. tonne of raw cocoa beans (cif)	Value of semi-processed products derived from 1 m. tonne of beans
US \$ 1190	Cocoa butter US \$ 1040 Cocoa cake US \$ 350
	1390
	Minus cost of processing 130
	1260

Therefore value added per m. tonne of beans = US \$ 70

On a crop of 180,000 m. tonnes the total value added would be US \$ 12.6 million.

Nigeria's exports of raw cocoa beans and of semi-processed products in 1986 and 1987 (the latest years available for all products) are shown in Table 1 attached. Exports of beans were approximately the same in each year - 148,000 m. tonnes in 1986 and 144,000 m. tonnes in 1987; however, exports of the products fell in 1987 compared with 1986 -

	1986	1987
Cocoa butter	8,947	5,716
Cocoa powder	1,440	1,198
Cocoa cake	13,113	2,373
Cocoa liquor	2,774	1,511

This decline, which is reported to have continued since 1987 was due to difficulties experienced by the processing companies with ageing plants, or

unsuitability of some equipment and due to severe shortage of working capital allied to high producer prices for raw cocoa beans associated with deregulation of export marketing and the fact that some exporters paid more, in Naira terms, than the world market price justified.

In 1986 Nigeria's exports of semi-processed products accounted for the equivalent of about 38,000 m. tonnes of beans and in 1987 for about 17,000 m. tonnes, or respectively for 20 per cent and 11 per cent.

The shift to exporting semi-processed processed (100 per cent minus any exports as fully processed consumer products) will create a very different marketing scenario. To date, with relatively small exports of semi-processed products the Nigerian exporters advise that much of the business has been concluded on the spot market, and through brokers, dealers and import agents.

Under the new scenario Nigerian exporters will need to know:

- (i) the extent to which resistance by traditional buyers in the international market will be encountered on account of the switch from export of beans to export of semi-processed products.
- (ii) Which of the traditional buyers will offer the best service and terms.
- (iii) Which of the products - cake, powder and liquor - are preferred.
- (iv) The possibilities that exist for forward and/or contractual selling.
- (v) Whether it is possible and advantageous to market the products direct to users such as confectionery manufacturers rather than brokers, dealers and import agents.
- (vi) What are the terms that final users would offer.
- (vii) What are the quality specifications made by the various potential buyers.
- (viii) What are the preferred sizes (volume) of consignments.
- (ix) What are the expected prices for the semi-processed products (or premia related to the price of beans).
- (x) What sources of market intelligence can be tapped or should be created.
- (xi) Whether a switch in the dominance of traditional destination countries would be desirable.

Nigeria's traditional markets, as indicated by average distribution of exports in 1986 and 1987 have been as below.

	Cocoa Beans	Cocoa Butter	Cocoa Powder and Cake	Cocoa Liquor	per cent
Netherlands	34	17	56	12	
UK	29	77	24	73	
West Germany	17	4	10	Neg.	
France	6	Neg	Neg	Neg	
Belgium	4	1	7	6	
Italy	Neg	1	Neg	Neg	
USA	3	-	Neg	9	
TOTAL	93	100	97	100	

Source: Derived from Table 1

Nigeria's exports have been large to West Europe and the Netherlands, the UK and West Germany have been the main markets.

By comparison with Nigeria's export pattern the world import pattern is shown for 1985-1987, for selected countries in Table 2 for cocoa beans; Table 3 for cocoa butter, and; Table 4 for cocoa powder and cake. Leading markets are identified in the summary below.

World imports, average share of world total 1985-1987

	Cocoa Beans	Cocoa Butter	Cocoa Powder and Cake	per cent
USA	17	28	36	
Japan	3	3	2	
Singapore	4	Neg	Neg	
Australia	Neg	3	5	
Belgium	2	6	2	
France	3	8	8	
West Germany	15	11	8	
Italy	3	1	5	
Netherlands	16	7	3	
Switzerland	1	4	Neg	
UK	7	12	3	
Bulgaria	1	Neg	[	
Czechoslovakia	1	Neg	[	
German DR	2	Neg	[ 3	
Hungary	1	Neg	[	
Poland	1	Neg	[	
USSR	11	2	[	
TOTAL	88	85	72	

Source: Derived from Tables 2, 3 and 4

## II THE PROJECT

### (a) Project Objectives

The objectives of the project are:

- (i) to enable Nigeria to maximise the commercial and financial benefits from exporting semi-processed cocoa products
- (ii) to appraise Nigerian processors of semi-processed products of which are the most preferred products on the market and of the quality requirements for each product
- (iii) to identify potential joint venture partners for Nigerian manufacturers of semi-processed cocoa products.

### (b) Output

The output of the project will be a report which will:

- (i) deal with the following aspects of the market for semi-processed cocoa products in selected West and East European countries
  - the demand for cocoa butter, cocoa cake, cocoa powder, and cocoa liquor
  - the sources and quantities of present supplies of these products from: domestic processors; other European countries; producing countries
  - the quality specifications for each product
  - the prices, or price ratio, for each product in relation to raw cocoa beans
  - which are the preferred products (in relation with ITC)
  - the structure of the import and distribution trade, identifying the main companies and their roles (brokers, dealers, importers, agents and users) (in collaboration with ITC)
  - the terms and conditions of the companies in each sector of the import/distribution/user structure
  - possible resistance by traditional importers of Nigerian cocoa beans and semi-processed products to the intended switch by Nigeria to exporting only semi-processed (and some processed products)
  - analysis and advice on the potential and advantages of marketing the semi-processed products direct to users such as confectionery and beverage manufacturers
  - details of packaging required and the preferred sizes (volumes) of consignment
  - sources of market intelligence that can be tapped; or a system that should be set up.

(ii) identify companies, whether importers, users, or machinery manufacturers, which would consider entering into joint venture partnerships with Nigerian manufacturers of semi-processed cocoa products.

(c) Activities

(i) Recruitment of Marketing Analyst by UNIDO

(ii) The Nigerian counterpart will assemble information on the present trading partners of Nigerian exporters of raw cocoa beans and of cocoa products. This information will be supplied to the consultant.

(iii) The consultant will carry out preliminary desk research and prepare a field research programme on the selected countries (see Note 1 below).

(iv) The consultant and the Nigerian counterpart will carry out the field work programme in Europe.

(v) The consultant will prepare and issue the report.

(vi) If required to do so the consultant will visit Nigeria to disseminate the findings of the report (see Note 2).

Note 1. The background information suggests that the following countries should be selected for study:

West Europe	East Europe
Netherlands	USSR
West Germany	German DR
UK	Poland
France	Hungary
Italy	
Belgium	

Incorporation in and selection of East European countries in the study poses some potential problems following the changed political and economic structure in these countries in 1989, but the need is indicated as a follow-up to the seminar held in Moscow between East European and West African countries.

Note 2. This study will form an integral part of other proposed projects - on the techno-economic feasibility of existing and new processing enterprises in Nigeria. If these projects are implemented the consultant should in any case be part of the feasibility study team for Projects Nos. 3 and 5 so a separate dissemination visit will not be necessary, otherwise it would be highly desirable.

(d) Inputs

(i) Government of Nigeria.

Provision of a counterpart by the Nigerian Export Promotion Council (NEPC).

(ii) UNIDO Inputs

	US \$
(a) Fee + expenses of Marketing Analyst in the field in Europe 2 m. months (selected countries)	22,000
(b) Fees of Marketing Analyst Home-based 1 m. months	6,000
(c) Travel and Subsistence for the Nigerian counterpart - to Europe (air fare) - in Europe - Travel (air) - Subsistence	2,500 2,500 12,000
(d) Participation with ITC Geneva	3,000
(e) Travel to and subsistence for 1 week in Nigeria for the consultant - air fare - subsistence	2,500 1,000
(f) Report	<u>1,500</u>
TOTAL	53,000

Note: 1. The Marketing Analyst's fees and expenses are calculated at UNIDO pro-forma costs for work overseas, and at US \$ 6000 per month for home-based work.

III REPORTING AND EVALUATION REQUIREMENT. EXPECTED FOLLOW-UP

The consultant will submit the final report to UNIDO for evaluation. The report will also be required for use in Projects 3 and 5.



Table 1. Nigerian Exports: Cocoa Beans, Cocoa Butter, Cocoa Powder, Cocoa Cake and Cocoa Liquor 1986 and 1987

	1986	1987
<b>Cocoa Beans '000 m. tonnes</b>		
Total	148.4	143.5
of which to:		
Netherlands	46.1	54.2
West Germany	11.6	37.1
UK	57.0	27.6
France	9.9	6.9
Belgium	5.9	5.0
Italy	0.1	2.4
Other West Europe	3.1	2.1
USA	2.8	5.5
USSR	4.5	-
Other East Europe	6.0	0.9
Other Countries	1.4	1.8
<b>Cocoa Beans m. tonnes</b>		
Total	8947	5716
of which to:		
UK	5875	5376
Netherlands	2313	138
West Germany	460	105
Italy	100	57
Belgium	92	40
Other Countries	107	
<b>Cocoa Powder m. tonnes</b>		
Total	1440	1198
of which to:		
West Germany	-	500
UK	188	346
Netherlands	312	212
Belgium	880	120
USA	-	20
Other Countries	60	-
<b>Cocoa Cake m. tonnes</b>		
Total	13113	2373
of which to:		
Netherlands	9619	297
UK	2334	1513
West Germany	750	522
Belgium	210	-
USA	200	41

Cocoa Liquor m. tonnes

Total	2774	1511
of which to:		
UK	2372	748
USA	-	409
Belgium	-	250
Netherlands	402	104

Source: Nigeria Trade Summary. Federal Office of Statistics, Lagos.

Table 2. Cocoa Beans: Imports into Selected Countries

'000 m. tonnes

	1985 - 1987	
	Average	Range
World	1442.0	1440.0 - 1464.4
of which		
North and Central America	266.9	225.4 - 283.4
of which		
USA	245.9	204.8 - 270.3
Asia	122.5	102.9 - 136.7
of which		
Japan	37.0	35.5 - 38.3
Singapore	60.9	52.5 - 75.2
Oceania	5.1	2.3 - 6.8
Europe	880.1	866.1 - 891.9
of which		
West Europe		
Belgium	35.0	32.5 - 38.3
France	44.8	43.7 - 46.5
West Germany	215.1	211.3 - 220.1
Italy	43.8	39.7 - 47.5
Netherlands	237.8	230.4 - 247.9
Switzerland	20.2	19.5 - 21.6
UK	103.3	96.6 - 108.8
East Europe		
Bulgaria	12.3	9.5 - 15.8
Czechoslovakia	15.3	12.8 - 16.7
German DR	22.3	20.2 - 24.3
Hungary	17.3	15.7 - 18.3
Poland	20.9	17.8 - 23.1
USSR	155.4	148.0 - 163.4

Source: FAO Trade Yearbook 1987

Table 3. Cocoa Butter: Imports into Selected Countries

'000 m. tonnes

	1985 - 1987	
	Average	Range
World	258.7	249.0 - 266.3
of which		
North and Central America	79.2	75.8 - 85.7
of which		
USA	73.4	70.1 - 79.8
Asia	12.5	11.3 - 13.4
of which		
Japan	8.8	8.5 - 9.3
Oceania	9.1	8.5 - 9.5
of which		
Australia	7.9	7.4 - 8.5
Europe	149.6	141.9 - 158.7
of which		
West Europe		
Belgium	14.5	13.8 - 15.4
France	20.9	19.3 - 23.7
West Germany	28.8	25.6 - 33.4
Italy	3.3	3.1 - 3.5
Netherlands	18.6	15.1 - 24.7
Switzerland	11.5	11.2 - 11.9
UK	31.2	29.7 - 32.5
East Europe		
Czechoslovakia	0.3	0.1 - 0.6
German DR	0.5	0.2 - 0.8
USSR	3.9	1.0 - 7.2

Source: FAO Trade Yearbook 1987

Table 4. Cocoa Powder and Cake: Imports into Selected Countries

	'000m. tonnes	
	1985 - 1987 Average	Range
World	251.8	224.6 - 279.2
of which		
North and Central America	105.7	91.6 - 121.9
of which		
USA	91.5	81.8 - 103.3
Asia	19.1	15.8 - 21.4
of which		
Japan	6.0	5.3 - 6.8
Oceania	13.2	12.2 - 15.0
of which		
Australia	12.8	11.9 - 14.4
Europe		
of which		
West Europe		
Belgium	5.7	5.5 - 6.0
France	20.9	18.7 - 23.2
West Germany	19.7	18.7 - 21.0
Italy	11.8	11.4 - 12.0
Netherlands	8.0	6.9 - 8.9
Spain	9.6	6.5 - 11.3
UK	7.3	6.6 - 8.3
East Europe (including USSR)	7.5	5.4 - 9.8
of which		
Czechoslovakia	0.5	0.1 - 0.9
German DR	2.3	2.0 - 2.7
Hungary	3.3	2.2 - 5.3
Poland	1.3	1.1 - 1.5

Source: FAO Trade Yearbook 1987

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION

PROJECT DOCUMENT

COUNTRY: Nigeria

PROPOSED TITLE: Study of the market for cocoa-based consumer products in selected West African countries

PROJECT NUMBER: No. 2

ESTIMATED DURATION: 3 months

UNIDO CONTRIBUTION: US \$ 30,000

GOVERNMENT CONTRIBUTION: Not estimated. But to provide:

- a counterpart (from NEPC)
- office accommodation
- secretarial assistance
- local transportation

POSSIBLE TIMING: First half of 1991

## I. BACKGROUND AND JUSTIFICATION

For the purposes of this overview, the region is defined as ECOWAS countries plus Cameroon, Congo, Gabon and Zaire.

Practically all countries in the region import chocolate and chocolate confectionery (SITC Classification 073). Two regional countries - the Ivory Coast and Cameroon - are large exporters.

Average imports in the two periods, 1982/84 and 1985/87, are shown in the table below in declining order of imports in 1985/87, for all countries in the region, except Nigeria, which record imports.

### Imports of Chocolate and Chocolate Confectionery in Selected West African Countries

Country	1982/84 Average m. tonnes	1985/87 Average	Increase or (Decrease) 1985/87 compared with 1982/84 per cent
Gabon	185.6	323	77
Congo	46.6	161	245
Cameroon	70.6	144.6	105
Senegal	194	123	(37)
Ivory Coast	108	119	10
Zaire	113.3	116.6	3
Ghana	73.3	76.6	5
Burkina Faso	52.6	55.6	6
Sierra Leone	16.3	47.6	192
Togo	25	30	20
Liberia	22	24.6	12
Gambia	28.3	20	(29)
Niger	106.6	15	(86)
Benin	9.6	7.3	(24)
Guinea Bissau	-	5.3	-

Source: FAO Trade Yearbooks

No data can be found for imports of cocoa-based beverages.

There is an informal export trade in Nigerian produced cocoa-based beverages as they have been seen on sale in other West African countries.

Nigerian manufacturers of cocoa-based beverages and confectionery have experienced a stagnant demand for their products in Nigeria since 1985 due to inflation and lack of purchasing power. One manufacturer, Cadbury Nigeria Ltd., advised that it had initiated market research in regional markets.

Although the quantities of chocolate and chocolate confectionery imported by regional countries are relatively small, penetration of these markets for these products and for cocoa-based beverages would create a larger market hence probably a good basis for scale economies in manufacture. In turn, at a later date, the production cost reductions might allow Nigerian manufacturers to compete in even more distant markets.

The proposal, then, is to carry out a study of selected regional markets for cocoa-based beverages and confectionery. Selection of the countries for

study is based on the size of the markets for chocolate and chocolate confectionery given in the table above, but with exclusions for given reasons. The first eight listed countries were initially selected but the following then eliminated:

- Cameroon & Ivory Coast - as they are major producers and exporters, even though also sizeable importers.
- Ghana - as it is a major producer of cocoa

The countries selected then are:

- Gabon, Congo and Zaire - which are outside ECOWAS but which have relatively large imports and reasonable purchasing power, and two - Gabon and Congo - have registered high growth rates in imports
- Senegal and Burkina Faso - which are within ECOWAS and have reasonable sized markets.

Only one of these countries - Senegal - has registered a decline in imports in 1985/87 compared with 1982/84.

The Nigerian Export Promotion Council (NEPC) has expressed interest in this study, noting that opportunities can remain unrealized and unsuspected until missions are carried out, quoting a sales mission to Liberia which resulted in orders for cocoa wine.

## II. THE PROJECT

### (a) Project Objective

The objective of the project is to identify markets in selected regional countries for cocoa-based consumer products enabling exports to be commenced, exports revenues to be enhanced, and opportunity created for manufacturers to enlarge their industrial base.

### (b) Outputs

The output of the project will be a market report for use by planners, manufacturers of cocoa-based consumer products and exporters.

### (c) Activities

- (i) Selection and appointment, by UNIDO, of a Marketing Consultant.
- (ii) Selection, by NEPC, of a counterpart.
- (iii) Desk research by the UNIDO consultant into produce flows, trade regulations etc.
- (iv) Desk research by the NEPC counterpart into the Nigerian supply base and, through ECOWAS in Lagos, into relevant regulations and contacts. Supply of a brief report to UNIDO for the consultant's use in field work planning.



- (v) Planning the field work programme by the UNIDO consultant.
- (vi) Immediately prior to the field work research programme in the selected countries, consultation in Nigeria between the consultant, the Federal Ministry of Commerce and Industry and NEPC.
- (vii) Carrying out the field work programme jointly by the consultant and the NEPC counterpart.
- (viii) Report preparation by the consultant, the key aspects having been discussed with the NEPC counterpart.

(d) Inputs

(i) Government Inputs

NEPC will provide a counterpart, and office accommodation, secretarial assistance and local transport for the consultant for work carried out in Nigeria.

(ii) UNIDO Inputs

	US \$
- Provision of a Marketing Consultant	
- Cost overseas (Nigeria, Gabon, Congo, Zaire, Senegal, Burkina Faso) aggregate 6 weeks	16,000
- Fees, home based, 1 month (at US \$ 6000 p.m.)	6,000
- Cost of travel and subsistence	5,500
outside Nigeria for the NEPC counterpart	1,500
- Report production costs	<u>1,000</u>
TOTAL	30,000

III. REPORTING AND EVALUATION REQUIREMENTS. EXPECTED FOLLOW-UP

The Consultant will submit the final report to UNIDO for evaluation by UNIDO and the Government of Nigeria.

Follow-up anticipated is exploitation of the market opportunities identified by Nigerian manufacturers and exporters.

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION

PROJECT DOCUMENT

COUNTRY: Nigeria

PROPOSED TITLE: Techno-economic feasibility study for  
rehabilitation of the three existing cocoa  
processing factories

PROJECT NUMBER: No. 3

ESTIMATED DURATION: 4.5 months

UNIDO CONTRIBUTION: US \$ 127,000 (SIS funding) ]  
+ US \$ 4,900 (Line 11.00) ] total US \$ 132,000

GOVERNMENT CONTRIBUTION: Not estimated. But to provide:

- liaison
- collaboration and counterparts by the existing  
factories
- office accommodation
- secretarial assistance
- local transportation

POSSIBLE TIMING: As soon as possible

FUNDING: Since this project is required urgently, it is  
recommended that it is funded under the Special  
Industrial Services (SIS) Programme, except for  
UNIDO mission costs which would be under Line 11.00

## I. BACKGROUND AND JUSTIFICATION

The Government of Nigeria has decreed that export of raw cocoa beans shall cease from January 1991 and from that date only semi-processed or fully processed cocoa or cocoa based products shall be exported.

In the short to medium term this means that the main exports will be the semi-processed products - cocoa butter, cake, powder (and possibly liquor, though the international market is poor for this product). Exports of fully processed cocoa-based consumer products (cocoa-based beverages and confectionery) will be minimal in the short to medium term due to limited production capacity and the extremely competitive nature of the market. The remainder of discussion and formulation of this project concerns only the semi-processed products.

There are three factories manufacturing semi-processed products at present. They are: Cocoa Industries Ltd, at Ikeja, Lagos State; Cocoa Products Industry (Nig) Ltd., at Ede, Oyo State, and; Ile-Oluji Cocoa Processing Co. Ltd., at Ile-Oluji, Ondo State. Each factory has a notional capacity of 30,000 m. tonnes intake of raw cocoa beans p.a. working 24 hours daily for eleven months, that is an aggregate notional capacity of 90,000 m. tonnes. However, due to deterioration of some plant, and problems even with relatively new plant the realistic capacity is little more than 40-45,000 m. tonnes. Furthermore, part of the capacity of the last two factories can only process the whole notional intake to cocoa liquor stage (a product not in high demand on the international market, and for which value-added is low).

A vital, and probably the first, step required, if Nigeria is to achieve exportation only of semi- and fully processed products, is that the existing factories should be rehabilitated and/or fully equipped so that all beans can be processed to the cocoa butter, cake and/or powder stage. This will require considerable capital investment. All three factories also have an acute problem of having very limited working capital, which also has to be addressed. This latter constraint has apparently arisen from the fact that when the Cocoa Marketing Board existed (until 1985) supplies of raw beans were relatively assured at controlled prices and with deferred payment. Since deregulation of exports and floating of the Naira, farm gate prices have escalated dramatically, at certain stages (particularly in 1988) to very high levels which sometimes exceeded the world market price in Naira terms, and the factories have been required to pay instantly for raw beans.

As a result of the combination of factory shortcomings and lack of working capital the aggregate intake of beans in recent years is reported as:

	m. tonnes
1986	25,000
1987	10,000
1988	10,000
1989	8,000

The intake compares very poorly with both notional or realistic capacity, and has declined progressively and dramatically. Indeed users of semi-processed cocoa products in Nigeria, such as Cadbury Nigeria Ltd. and Food Specialities Ltd., have been forced to buy raw beans which the companies have processed on a fee basis - this procedure probably accounted for 80 or more per cent of the quantity processed in 1989.

Management in each factory stated that application has been, or will be, made to the African Development Bank for capital funding assistance for rehabilitation (not for working capital), though the outcome is not known. With regard to working capital the approach appears to be a mix of seeking further equity from shareholders and sale of Government equity - the latter is in line with Government policy.

If the existing factories can be rehabilitated (inclusive of up-grading to process the total intake to butter and cake or powder) then the resultant realistic capacity of 90,000 m. tonnes of bean intake will represent about half of the present crop. Additional capacity to process the remainder in order to meet the Government's decree on marketing, is likely to come from new factories - this is the subject of a separate but linked feasibility study (Project No. 5).

The precise requirements of each of the existing factories vary. Thus, while this feasibility study is formulated as one project, it will be necessary to prepare three reports - one for each factory. There will, however, be sections which are common to each report, e.g. the review of international markets. Furthermore, appointment of one consultancy team will be the most cost-effective procedure due to similarities for each study and increasing familiarity with the subject.

Key information on each factory is as follows.

Cocoa Industries Ltd., Ikeya

Established 1965. Started production 1967.

Share Capital authorised N12,020,752

Share Capital issued N 6 million

Shareholders. 100% public (Oyo, Ondo and Ogun States Holding Companies)

But up to 60% being offered to private investors.

Capacity: 30,000 m. tonnes raw cocoa beans p.a.

Intake: 1989 3,500 m. tonnes

Number of employees: 760 at full operation, presently 500

Products: Cocoa butter; cocoa cake; cocoa powder; cocoa-based food drink (Vitalo); chocolate.

The original equipment was supplied by the German company, Coutinho and Caro & Co. At present the equipment giving the greatest problems are the presses - the present shortcomings of the presses limits throughput to 40 per cent of the notional capacity.

Management says that rehabilitation or replacement of the presses is estimated to cost N.12 to 15 million each. Application has been made on ADB funds, administered by the Nigerian Industrial Development Bank (NIDB) for refurbishing or replacement of four presses at a cost of N.60 million. Management indicates a need also for N.35 million as Working Capital.

Management says its cost of production, inclusive of overheads (capital investment is largely amortised but excluding the cost of beans) is N.600 of N.900 per m. tonne of beans depending on the throughput.

- On the marketing side, the company owns a 100 m.tonne capacity store in Akure, Ondo State, for temporary storage of raw beans and has a 1000 m. tonne capacity store at its factory, where it also has a store for 300-400 m. tonnes of cocoa butter. In the past when it produced and exported larger quantities, exports were made primarily to final users; now with limited exports sales are made to importers. The items exported are cocoa butter, and cocoa cake - cocoa cake, not cocoa powder, is stated to be required by the international buyers.

Cocoa Products Industry (Nig) Ltd.

Established 1979. Started production 1982.

Share Capital authorised N4,450,000

Shareholders: 85 per cent Oyo State Government  
15 per cent foreign, Hoburn of Africa, Hamburg, West Germany  
Some of the Government shareholding is to be offered for sale to private investors, but how much was not stated.

Capacity: Notional capacity is 30,000 m. tonnes p.a. of raw beans. However, less than half of the intake can be processed to cocoa butter and cocoa cake stage due to inadequacy of presses.

Intake in 1989 was less than 3000 m. tonnes.

Number of employees: 111

Products: Cocoa butter; cocoa cake; cocoa powder; cocoa liquor.

The presses in the original equipment supplied were screw presses. They did not perform well and were replaced by hydraulic presses in 1989, two Italian and one Dutch; the former have not operated very satisfactorily. The factory has four generators, but only one is operating satisfactorily which forces use of the public supply which is both costly and liable to cuts.

The company has storage for 2,000 m. tonnes of raw beans and for 1,000 m. tonnes of cocoa butter (refrigerated).

Management estimates that the company's capital needs for rehabilitation, including generators, is N.50 to 60 million, while there is an additional need for N.65 million as working capital to turn the results around. With regard to disinvestment, this is likely to be problematic as the original loan of N.9 million has not been liquidated.

Ile Oluji Cocoa Processing Co. Ltd.

Incorporated 1979. Started operations 1984.

Share Capital authorised and fully paid: N7,142,850

Shareholders: Ondo State Investment (Holding) Co. Ltd. 40%  
Majekodunmi Ventures Ltd. 20%  
Ondo State Farmers Congress 15%

Coutinho, Caro and Co. (Hamburg)	14%
Nigerian Industrial Development Board	11%

N.B. It is intended that the Ondo State Government will reduce its shareholding to 15 per cent, making a further 25 per cent available to private investors. The Securities and Exchange Commission has valued the shares at 230 kobo for every 100 kobo share.

Capacity: 30,000 m. tonnes p.a. of raw cocoa beans. However, 40 per cent can produce only cocoa liquor; this remains idle due to the poor demand for the product, and leaves only 18,000 m. tonnes capacity for cocoa butter, cake and powder.

Number of employees: 367

Products: Cocoa butter; cocoa cake; cocoa powder and potentially cocoa liquor

Actual intake of beans has been as follows:

	m. tonnes
June to September 1984	3,439
1984/85 (October to September)	10,584
1985/86	7,046
1986/87	6,530
1987/88	7,845

Figures for 1988/89 were not available but are likely to have fallen to 2,000 to 3,000 m. tonnes.

The cost of processing, including overheads but excluding the cost of beans, was put at N.1800 per m. tonne of beans; the high figure was no doubt due in part to the large overhead cost of a relatively new factory and the low throughput.

Although the factory is only six years old, management state: that the equipment is in need of rehabilitation, it was suggested that some of the original plant may have been part-used. Since start up storage capacity has been increased from 10,000 to 40,000 m. tonnes. The extent of capital required for rehabilitation was not disclosed but is likely to run to several tens of million Naira.

Like the other two companies, Ile Oluji is suffering from an acute working capital problem, which was put at some N.20 million. The company expects to generate some capital by sale of equity, and some by increased equity from present shareholders. Thoughts also centred on seeking a loan from the ADB.

Strategy for future growth includes the possibility of acquiring the (900 hectares) cocoa plantation at Oda from the Ondo State Investment (Holding) Company Ltd., thus ensuring supply of some beans, and; diversification into production of cocoa-based beverages and other associated products. The latter is seen as a project for implementation during the next five years; the current cost of equipment only for such an enterprise is put at US \$ 3 million.

## II. THE PROJECT

### (a) Project Objective

The objective of the project, through a detailed techno-economic feasibility study of the three factories processing raw cocoa beans into cocoa butter, cake and powder, is to enable these factories to improve their operations and profitability, and to produce a bankable rehabilitation projects to support applications for loans for fixed and working capital. Realisation of full installed capacity is crucial to meet the Government's decree that exports of raw cocoa beans shall terminate as from January 1991.

### (b) Outputs

The outputs of the project will be three reports, one for each factory. These reports will cover: raw material procurement; an inventory of existing factory buildings and equipment by type and condition; an assessment of the need for refurbishing, replacement or adding to existing buildings and equipment; manpower requirements; accountancy; management; markets for and marketing of the products, and; financial and economic evaluation of recommended solutions to the existing problems.

### (c) Activities

- (i) Utilise the report on the international market for semi-processed cocoa products (Project No. 1), modifying it as necessary for the purposes of this feasibility study.
- (ii) Undertake a complete inventory study of the site, buildings, services and equipment of the factories to establish their condition and capacity in relation to the notional capacity of the factories.
- (iii) Study manpower numbers, usage and capability.
- (iv) Study accounting methods and procedures.
- (v) Study management in all its aspects, including raw material procurement, factory management and marketing of products.
- (vi) Prepare a full techno-economic feasibility study report for each factory, which will present fully costed recommendations for rehabilitation of facilities and operation recommendations for management, manpower usage, accountancy and procedural changes if necessary; and will include financial and economic evaluations of the investments and systems recommended.
- (vii) Present the reports initially to UNIDO.

### (d) Inputs

The Federal Ministry of Commerce and Industry and the State Government Ministries of Commerce (or Trade) and Industry will liaise with the consultants to facilitate the project. The General Managers or their staff nominees in the three factories will act as counterparts.

The consultants will be provided with appropriate office accommodation, secretarial assistance and local transportation.

(ii) UNIDO Inputs

Consultancy

UNIDO will sub-contract a four man consultancy team consisting of:

Personnel Costs		US \$		Total
		Nigeria	Vienna	
Financial Analyst (Team Leader)	4 man months	22,000	20,000	42,000
Engineer	3 man months	20,000	10,000	30,000
Food Quality Technologist	3 man months	22,000	10,000	30,000
Market Analyst	2 man months	10,000	10,000	<u>20,000</u>
				122,000
Software accomodation		3,000		
Report Preparation (3 reports)		<u>2,000</u>		
	Sub-Total	127,000		

Notes: 1. 60 per cent of each expert's time will be spent in Nigeria.

2. The cost of the time referred to in Note 1. is assessed at the standard UNIDO rate for Nigeria for time spent there, and US \$ 6000 per month for the remainder.

3. The Team Leader is allocated additional time for coordinating the report.

4. The Market Analyst's time is reduced by comparison with the other experts due to the presumed availability of the report (Project No. 1) on the international market for semi-processed cocoa products.

UNIDO Supervision (under Line 11.00)

- Visit to Nigeria during the consultant's field work (2 weeks)

Air fare	2,350	
DSA (15 days)	2,340	
	4,690	4,690

- In-house back-stopping

96,890

Say 97,000



III. REPORTING AND EVALUATION REQUIREMENTS. EXPECTED FOLLOW-UP

The consultancy team will prepare three final reports, one for each factory. The reports will be jointly evaluated by UNIDO and the relevant Nigerian Federal and State Governments. The three reports will then be submitted to the respective factories.

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION

PROJECT DOCUMENT

COUNTRY: Nigeria

PROPOSED TITLE: Provision of engineering and product quality assurance advice to RMRDC in development of a catalytic model cocoa processing factory

PROJECT NUMBER: No. 4

ESTIMATED DURATION: 2.5 months

UNIDO CONTRIBUTION: US \$ 47,000

GOVERNMENT CONTRIBUTION: Not estimated. But to provide:

- liaison and counterparting (RMRDC)
- office accommodation
- secretarial support
- local transportation
- access to engineering workshop and laboratory facilities

POSSIBLE TIMING: Early to mid 1991

## I. BACKGROUND AND JUSTIFICATION

Nigeria has a shortfall in processing capacity for processing raw cocoa beans to cocoa butter, cake and powder of 90,000 m. tonnes of beans. It is essential for this shortfall to be filled for implementation of the Government's decree that no raw cocoa beans shall be exported from January 1991.

The existing factories have been equipped wholly with imported equipment supplied on a turnkey basis. The present estimated capital cost of such a factory with a 30,000 m. tonnes p.a. intake of beans is N.200 million (US \$ 26 million) of which plant of the type mentioned constitutes some two-thirds. A 10,000 m. tonne intake factory, with similar equipment would probably cost some N.80 to 90 million (US \$ 10 to 11.5 million).

The Raw Materials Research and Development Council (RMRDC) is about to set up a catalytic model factory. This will probably have a capacity of 10,000 m. tonnes intake (determined by the capacity of the hydraulic pot press - which it is generally felt will have to be imported). However, it is intended that much of the remaining equipment will be locally manufactured, and greater reliance will be placed on manual, rather than mechanised movement on the factory lines. Machinery suppliers have been asked to tender for supply of equipment by 15 February 1990, and RMRDC hopes to erect its factory as soon as possible - probably in Ondo State where land and services will be contributed; RMRDC expects to fund the remaining costs from its own resources.

The aims of RMRDC are (i) by using as much locally fabricated equipment, to minimise the capital cost, (ii) to test operate the factory for one season, and (iii) to demonstrate to entrepreneurs that the enterprise is viable, thus encouraging them to finance and operate similar factories.

Since the RMRDC factory will incorporate untested equipment there may be teething problems on: (i) plant and equipment engineering matters and/or (ii) achieving the product qualities demanded on the world market.

It is therefore recommended that provision be made, under Technical Assistance management, for UNIDO to provide advisory expertise, if required and requested. The disciplines of experts that may be required are foreseen as: (i) food machinery engineer, and (ii) food quality control technologist.

It is not possible to assess the length of time that one or both of these experts would be required, though three options are possible:

- (i) a short advisory visit of say two weeks each by both experts
- (ii) a longer visit of say two months by both experts working closely with operators through the processing operation, with a view to effecting modifications and adjustments
- (iii) a short (two-week) visit by one expert with a longer one (two months) by the other, depending on the nature of the teething problems encountered.

For the purposes of estimating the project cost option (ii) has been assumed.

## II. THE PROJECT

### (a) Project Objective

To assist the Government of Nigeria, through RMRDC, to develop a factory, for processing raw cocoa beans into cocoa butter, cake and powder, which attains high engineering standards and produces high quality products in order that exports to international markets are facilitated.

### (b) Output

On-the-spot advice and as appropriate assistance with modifications to equipment and procedures. A final report will be prepared by each expert.

### (c) Activities

The Engineer will:

- Review the overall operation of the factory equipment and advise on any modifications needed to improve operational flow, with due regard to engineering efficiency and cost effectiveness.
- Examine any items of equipment which are operating sub-optimally and advise on, or assist in modifications, and test the resulting items.
- Pay particular attention to working parts that are subject to greatest stress in order to advise on, or modify, those parts to ensure maximum longevity.
- In collaboration with the Food Quality Control Technologist and factory management, advise on appropriate equipment operation to achieve and maintain output of high quality products.
- Prepare an equipment maintenance guide.

The Food Quality Control Technologist will:

- Sample the products produced for conformity with international standards.
- Advise on procedural, operational, or equipment adjustment or modification aspects which are required to remedy any shortcomings in product quality.
- Prepare an operations manual aimed at achieving and maintaining product quality standards.

### (d) Inputs

#### (i) Government Inputs

Government, probably represented by RMRDC, should provide office accommodation, secretarial support, access to engineering workshop and laboratory facilities, and counterparting and local transportation.

(ii) UNIDO Inputs

US \$

- Two experts - Food Marketing Engineer and Food Quality Control Technologist - each for 2 man-months, at \$ 8,250 per man-month	40,000
- Miscellaneous: reports, laboratory expendables engineering test equipment	<u>7,000</u>
	47,000

III. REPORTING. EXPECTED FOLLOW-UP

Each expert will submit a final report, a major part of which will be the guides on factory maintenance and on operation to achieve and maintain product quality. The reports will, if appropriate, recommend follow-up work; this cannot be foreseen.

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION

PROJECT DOCUMENT

COUNTRY: Nigeria

PROPOSED TITLE: Techno-economic and locational feasibility study  
for new commercial medium-scale cocoa processing  
factories

PROJECT NUMBER: No. 5

ESTIMATED DURATION: 2 months

UNIDO CONTRIBUTION: US \$ 55,500

GOVERNMENT CONTRIBUTION: Not estimated. But to provide, particularly by  
RMRDC:

- collaboration and counterparting
- office accommodation
- secretarial assistance
- local transportation

POSSIBLE TIMING: First half of 1991

## I. BACKGROUND AND JUSTIFICATION

The Government has decreed that from January 1991 export of raw cocoa beans shall cease. Exports therefore will be of semi-processed products (cocoa butter, cocoa cake or powder, and possibly cocoa liquor though this is not a preferred product on international markets), or of fully processed cocoa-based consumer products. This project concerns only the semi-processed products.

Nigeria's present cocoa crop is of the order of 180,000 m. tonnes p.a. of raw cocoa beans. There are three factories producing semi-processed products. Their notional aggregate capacity is 90,000 m. tonnes p.a. of raw cocoa beans, although due to plant deterioration and other factors their present realistic capacity is about half this total. A separate, but related, study (Project No. 3) is recommended to evaluate the techno-economic feasibility of bringing those factories back to full capacity capability. However, even when that is achieved Nigeria will require an additional 90,000 m. tonnes capacity, which is what this project is concerned with.

Processing to semi-processed products is estimated to provide added value, at present prices for raw cocoa beans on the international market of US \$ 70 per m. tonne of raw beans processed.

The capital cost of building and equipping a factory of 30,000 m. tonnes p.a. of raw cocoa beans intake capacity (similar to the existing factories), using wholly imported equipment, is estimated to be N.200 million (US \$ 26 million) at the present exchange rate. A factory of 10,000 m. tonnes intake capacity based on wholly imported equipment would be proportionally more expensive at say N.80 to 90 million.

However, the Raw Materials Research and Development Council (RMRDC) has just embarked on a project to build a catalytic model factory, with the intention of running it, or supervising its operation, for one season. This model factory is likely to be of 10,000 m. tonnes capacity, which is determined by the capacity of the press and which it is felt is one piece of equipment which will have to be imported. However, the aim is to minimise imported equipment and to replace mechanical in-factory handling and movement largely by manual operation. In this way it is hoped to dramatically reduce the capital cost.

A second, very important role for the catalytic model factory is that it will be used to demonstrate the technical and economic feasibility of the enterprise to private entrepreneurs who would therefore be encouraged to simulate the enterprise and provide the additional capacity needed.

RMRDC has called for tenders from Nigerian companies to fabricate the equipment; these tenders were due on 15 February 1990.

It is possible that RMRDC may encounter teething problems on engineering and/or product quality aspects; however, a separate Technical Assistance Project (Project No. 4) has been recommended, if required, to address such problems.

RMRDC's aim is to have the factory built and to operate it in the 1990/91 (October to September) season.

Take up and replication of RMRDC's model factory presents a further consideration, that is location of the factories in relation to distribution of crop production and costs of primary procurement and product marketing. With a crop of 180,000 m. tonnes of raw cocoa beans and assuming that the distribution now is much the same as it was in 1984/85 (the last season for which data are available), the distribution by States is:

State	Production* m. tonnes
Ondo	103,500
Oyo	53,250
Bendell	8,000
Cross Rivers	5,750
Imo	4,250
Ogun	4,000
Kwara	1,000
Anambra ]	
Benue ]	250
Gongola ]	
Rivers ]	
TOTAL	180,000

\* Rounded to nearest 250 m. tonnes

The three existing factories are located in Ondo, Oyo and Lagos (on the border of Ogun State) States. The factory in Lagos State has a buying facility in Ondo State.

The map, attached (page 4), shows the States and location of the present factories.

While the value-added from export of semi-processed cocoa products over exports of raw beans is known, see above, the overall benefit to Nigeria's economy will depend on the techno-economic, including locational, aspects of the potential new factories. This project addresses these matters.

## II. THE PROJECT

### (a) Project Objective

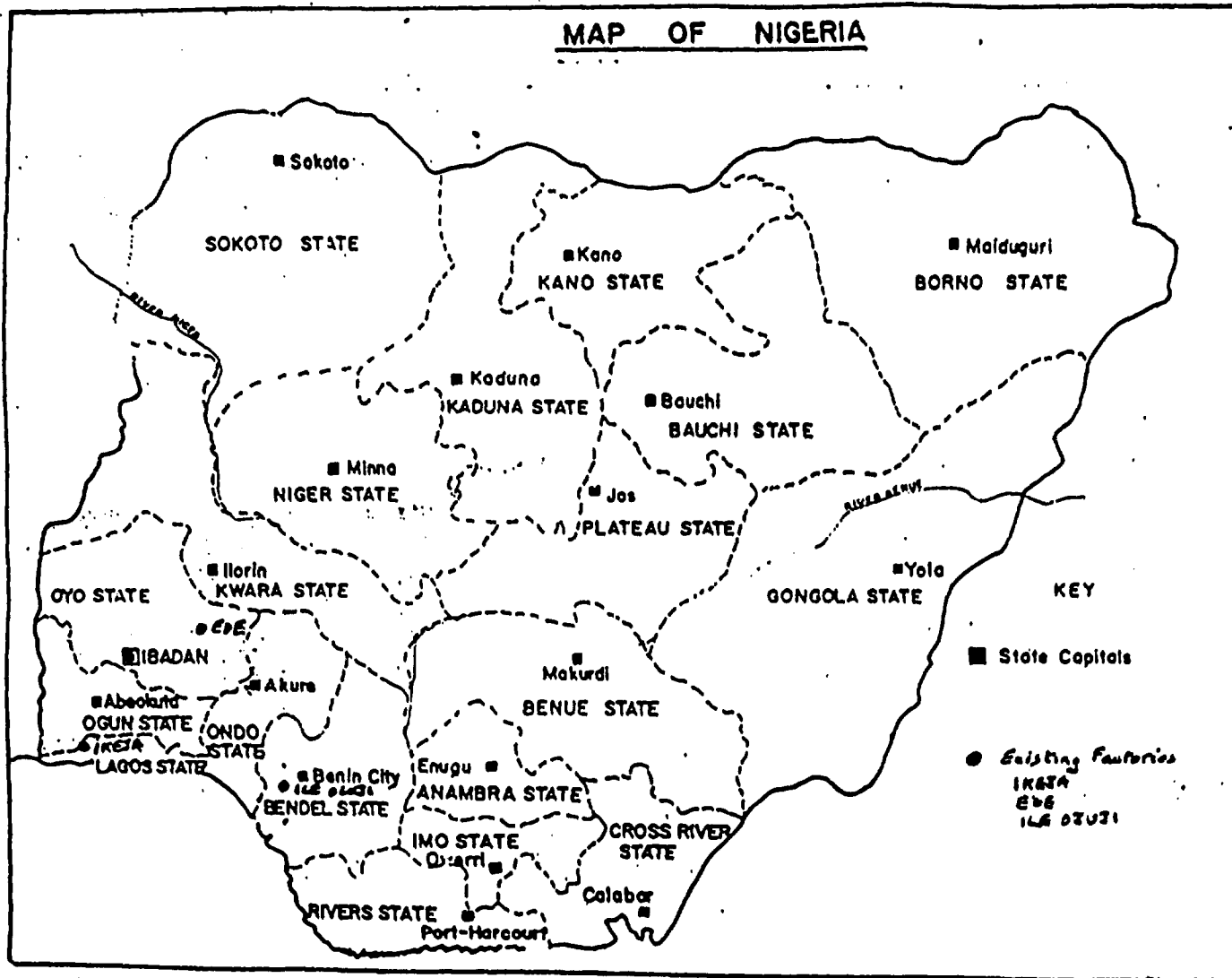
The objective of the project is to assist entrepreneurs who are contemplating investment in enterprises for manufacturing semi-processed cocoa products, by providing a techno-economic evaluation which would be the basis also for applications for loans, and providing guidelines on preferred locations of the enterprises.

### (b) Outputs

The output of the project will be a feasibility study report of medium scale factories to manufacture semi-processed cocoa products. It will assess the techno-economic viability, based on a catalytic model factory to be set up by the RMRDC, and will indicate preferred locations for factories in relation to raw material procurement and product marketing logistics and costs.



# MAP OF NIGERIA



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(c) Activities

- (i) Draw on the report on the international market for semi-processed cocoa products recommended under Project No. 1 and incorporate the conclusions of that report into this feasibility study.
- (ii) Carry out a feasibility study of new factories based on the performance of the catalytic model semi-processed cocoa products factory which RMRDC intends to set up.
- (iii) Carry out a study on locational aspects for new factories, in relation to the logistics and costs of raw material (raw cocoa beans) production areas and product marketing, and make appropriate recommendations on locations.
- (iv) Prepare the report.

(d) Inputs

(i) Government Inputs

The Federal and State Ministries of Commerce (or Trade) and Industry and of Agriculture will liaise and cooperate with the consultants. RMRDC, an agency of the Federal Ministry of Science and Technology, will have a major collaboration role with the consultants in regard to its catalytic model factory.

The consultants will be provided with adequate office accommodation, secretarial assistance and local transportation.

(ii) UNIDO Inputs

Consultants	US \$
Financial Analyst (Team Leader) 1.50 man-months	16,500
Engineer ]	
Food Quality Technologist ] 1.25 man-months each	37,500
Market Analyst ]	
Report Preparation	<u>1,500</u>
TOTAL	55,500

Notes.

1. 50 per cent of the Team Leader's time will be spent in Nigeria and 50 per cent at home, while 67 per cent of the other consultants' time will be spend in Nigeria.
2. While it would be ideal for the project to be carried out immediately following the feasibility study of rehabilitating existing factories (Project No. 3), this will not be possible due to time lapse before the RMRDC catalytic model factory is erected commissioned and operated. However, it would be highly desirable to appoint the same team of consultants for Projects Nos. 3 and 5.

III. REPORTING AND EVALUATION REQUIREMENTS. EXPECTED FOLLOW-UP

The consultants will submit a final report upon completion of the assignment which will be evaluated by UNIDO in the first instance. It will then be officially submitted to the Government of Nigeria.

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION

PROJECT DOCUMENT - PROJECT IDEA

COUNTRY: Nigeria

PROPOSED TITLE: Workshop on by-products and derived products of cocoa to determine present knowledge, to identify future opportunities and to evolve a Research and Development Programme

PROJECT NUMBER: No. 6

ESTIMATED DURATION: 5 days of workshop

UNIDO CONTRIBUTION: To be prepared

GOVERNMENT CONTRIBUTION: Not estimated. But to provide:

- conference facilities
- possible assistance with participants' accommodation costs
- internal travel costs
- secretarial assistance

POSSIBLE TIMING: Late 1990 or early 1991

## I. BACKGROUND AND JUSTIFICATION

At present commercialisation of cocoa in Nigeria is almost wholly restricted to exploitation of the beans by:

- drying the beans for export as raw beans (to be terminated on January 1991)
- processing the raw beans into cocoa butter, cake and powder. Practically all the butter and cake is exported. Some 2500 m. tonnes of powder is retained for domestic processing into consumer products
- processing of: cocoa powder into cocoa-based beverages and confectionery products; cocoa powder and butter into confectionery products; cocoa butter into cosmetics.

The parts of the cocoa pod, or by-products of processing which are little, or not, exploited are:

- the empty pod husk which is potentially, when dried and ground, a replacement for cereals in livestock feeds. The Cocoa Research Institute of Nigeria (CRIN) has carried out investigations, in collaboration with the Universities of Ibadan and Ife, into the feeding value of this by-product. It can replace cereals up to 17 to 22 per cent, weight for weight, before toxicity problems (due to the theobromine content) impinge. Potentially there would be some 30,000 m. tonnes of the dried product available, though there would be considerable constraints on realising the full potential due to the need for farmers to dry the husks, and due to logistics problems of collection.
- the juice which drains from the wet beans on first extraction, and the juice which drains during fermentation. Some wine is produced at present but it is certain that much juice goes to waste. The second draining would have attendant problems of bacterial and other deterioration.
- the shell which is separated after grinding in the processing of raw beans into butter, cake and powder. Some minor sales have been made to livestock feed manufacturers and farmers living near to the factories. However, the majority is wasted. The volume of shell potentially available is around 15,000 m. tonnes.
- fatty acids, food colourings and tannins. Representatives of the Federal Institute for Industrial Research, Oshodi (FIIRO) believe there is potential for fractionating cocoa butter to produce fatty acids which will be required as the food processing industry advances, and for extraction of food colourings and tannins.

An analysis of present knowledge, and a plan for Research and Development (R & D) together with the personnel requirements and capital and operation costs, are required. A workshop is recommended at which all leading interests are represented, pre-prepared position papers are presented and discussed, and a costed R & D programme is developed.

## II. The Project

### (a) Project Objective

To provide Government and interested parties in Nigeria with a base line document for fuller utilisation of the cocoa crop, and a R & D programme directed to this end.

### (b) Outputs

A report for an R & D programme for use by Government to consider implementation with internal funding, or for making application to Aid Donors for support funding, and if necessary Technical Assistance with appropriate expertise.

### (c) Activities

#### 1. Activities in preparation for the Workshop

(i) Appointment by the Government of Nigeria of the agency responsible for the workshop in Nigeria. The Federal Ministry of Science and Technology, or one of its units or Institutes, would appear to be an appropriate choice.

(ii) Deciding, in collaboration with UNIDO, the timing for the workshop.

(iii) Determination of and invitations to participants. There should be an

appropriate mix of R & D organisations (such as FIIRO; RMRDC; CRIN; Universities); relevant Ministries (Agriculture; Science and Technology; Commerce and Industry; Finance and Economic Development); commercial interests (farmers' representatives e.g. Ondo State Farmers' Congress; food processors; livestock feed manufacturers), and; industry and commercial associations (MAN, AFBTE, etc.).

(iv) Preparation by key participants of position papers to incorporate the extent of present knowledge and outline plans for R & D. For example by CRIN on use of empty husk as livestock feed and wine production from juice; by FIIRO on its ideas on extraction of fatty acids, food colourings and tannins, and; by food processors and livestock feed manufacturers on work they have undertaken and perceived implementation, or constraints adversely affecting implementation.

(v) Provision of the position papers to UNIDO for supply to UNIDO's experts.

(vi) Selection of the venue for the workshop, and making arrangements for facilities, accommodation, services etc.

(vii) UNIDO to select or recruit experts.

## 2. The Workshop

- (i) Duration: 5 days
- (ii) Date: to be decided, say late 1990 or early 1991
- (iii) Place: to be decided, but in the cocoa region
- (iv) Number of participants: see c (iii) above.
- (v) Tentative Workshop Programme:

Day 1 - Registration. Opening Ceremony. Distribution of Documents.  
- Presentation of Position Papers.

Day 2 - Presentation of Position Papers.

Day 3 - Syndicate groups, based on interest and expertise to discuss  
and modify R & D proposals.

Day 4 - Presentation of revised R & D proposals.

Day 5 - Drafting sub-committee prepares interim Workshop Report.  
- Interim Report presented to the group.

## 3. Post-Workshop activities

- (i) Finalisation of the report.
- (ii) Distribution of the report to interested parties.

### (d) Inputs

#### (i) Government of Nigeria

- Provision of conference facilities
- Possible assistance with accommodation costs for Nigerian participants
- Internal travel costs
- Secretarial assistance

#### (ii) UNIDO Input

To be prepared

### III. REPORTING AND EVALUATION REQUIREMENTS - EXPECTED FOLLOW-UP

The project will be subject to evaluation in accordance with the rules and procedures established by UNIDO. The findings of the Workshop will be examined by UNIDO in order to appraise further steps required to move to implementation.

#### Envisaged Follow-up

It is expected that the Workshop will identify R & D programmes the implementation of which will enhance the value of the cocoa crop. Some constraints on Research (such as non-availability of laboratory equipment) and on Development and Implementation (such as funding and socio-economic constraints) are likely to emerge. UNIDO would seek to generate technical assistance and investment projects to address these constraints.