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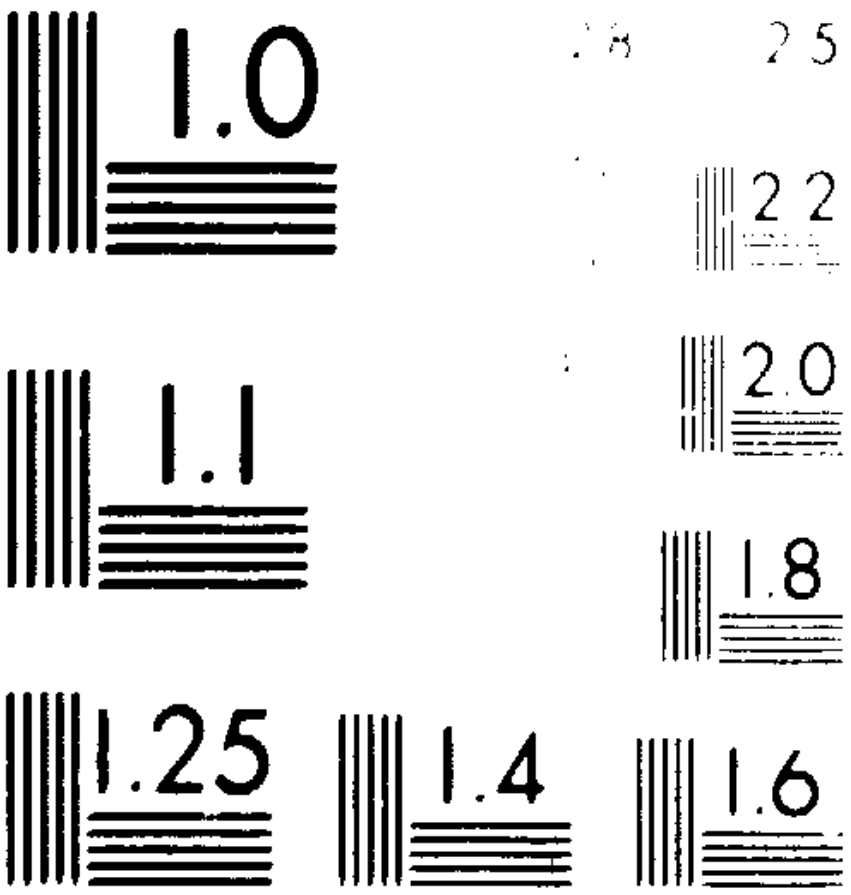
Vienna International Centre, P.O. Box 300, 1400 Vienna, Austria
Tel: (+43-1) 26026-0 · www.unido.org · unido@unido.org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REVIEW OF LOCAL MANUFACTURING CAPABILITIES FOR SPARE-PARTS AND EQUIPMENT FOR THE OILS AND FATS INDUSTRY IN NIGERIA

US/INT/78/073

TERMINAL REPORT

Prepared for the Government of Nigeria by the United Nations Industrial Development Organization

Based on the work of Mr. Varnakulasingam, expert in oilseed and vegetable oil processing industry

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* This report has not been cleared with the United Nations Industrial Development Organization, which does not, therefore, necessarily share the views expressed.

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I. SUMMARY

1.01 The vegetable oil industry in Nigeria used to be the major source of export earner, before the commercial exploitation of petrolium. The industry has deteriorated badly, since 1970 and now Nigeria have become a net importer. The more important oilseeds grown in Nigeria are oil plam, groundnut and cottonseed.

1.02 There are 133 small palm oil processing plants in Nigeria, of which 65 units are now in operation. Of the 65 units in operation, four are stork hydraulic presses imported from abroad, the remaining units are locally fabricated power operated screw and hand presses. The spare-parts for these plants and equipment are mostly locally fabricated, except for a few items which are imported from abroad. In the case of few modern palm oil processing plants owned by the private sector companies, almost all the spare parts are imported from abroad. Since 1 April 1980, the ordering process has been simplified by the Federal Government of Nigeria. Presently, it takes between 4 to 8 months from the time an order is placed to the time the spare parts are actually received.

1.03 Majority of the plants used for groundnut processing are mechanical expellers imported from Simon Rosedowns of England and Fried Krupp GmbH of West Germany. One company in Kano use solvent extraction plant imported from Speichim Ltd. of France. Most of these plants are closed down and some are working 1 - 3 months a year for the last 5 to 7 years due to lack of sufficient raw materials. Since the load on the expellers are less, the wear and tear will be less and the spare parts requirement will also be reduced. Spare parts are mostly imported from abroad.

1.04 Due to government policy to allow free imports of spare parts under Open General Licence (OGL), there is no demand for locally made spare parts. The duty payable for spare parts imported into Nigeria is five per cent, which means the locally fabricated spare parts are more costlier than imported ones. In addition, the locally fabricated spare parts have shorter life expectancy.

1.05 CONLCUSION

Because of the government new policy to import spare parts under Open General Licence (OGL), further development of the engineering industries in Nigeria is hampered. The local development of skills can take place only by encouraging development of local industries.

1.06 In order to revive the vegetable oil industry in Nigeria, government should consider adopting number of short and long-term policies and programmes. This may include setting-up a single agency or body solely responsible for vegetable oil industry development or the existing Produce Boards to handle the development of all three major discipline of the industry, namely: production, processing and marketing.

1.07 RECOMMENDATIONS

An arrangement should be made so that Nigeria can learn from the experiences of other developing countries in Asia in the development of oil palm, groundnut and coconut industry. A team of ten Nigerian vegetable oil industry experts be sent to Malaysia, Indonesia, the Philippines and India on a study tour. Government of Nigeria may request UNIDO to make arrangements for the study tour.

1.08 Nigerian Government to consider arranging a national symposium on oil palm, groundnuts and coconut industry in collaboration with UNIDO and FAO. The main purpose is to revive the regretable oil industry in Nigeria.

1.09 The oil palm processing industry should be modernized and concentrate as far as possible in amalgamation or merger of small industries.

1.10 Government of Nigeria to consider seeking foreign assistance or collaboration for few years to train Nigerian oil palm producers how to increase oil palm production, increase efficiency in oil milling and improve the quality of oil produced.

1.11 Effective quality control of edible oils is recommended to prevent unhygenic stored and processed unrefined oil to be offered for human consumption.

1.12 Every enccouragement should be given to soap industry to use cheaper non-edible oils so as to spare the expensive good oils for edible purposes. The encouragement may be in the form of licence to import cheaper oils.

II. INTRODUCTION

PROJECT BACKGROUND

2.01 In course of further development of oils and fats industry in developing countries, UNIDO has noted that a considerable number of existing factories experience technical problems due to lack of spare parts. Replacement of worn out pieces of equipment in most cases dependant on imported spare parts from overseas manufacturers in the developed countries. Shortage of foreign exchange hardly permits relevant imports from developed countries and the local engineering industry lacks the manufacturing know-how and the required technical facilities.

2.02 When setting up new factories, similar difficulties are being experienced by industrialists in some developing countries. Machineries and equipment, which could easily be manufactured by the local engineering industry have to be imported, if the required know-how cannot be made available from suitable sources.

2.03 The efficient operation and further technical development and economic improvement of the oils and fats industry in developing countries also depends on the ability and capability of the local engineering industry to service it, maintain its technical standards and further expand it by new supplies of locally fabricated quality plants and equipment.

2.04 These problems were discussed in details among the representatives of developing and developed countries at the First UNIDO Consultation Meeting on the Oils and Fats Industry which resulted in a conclusion that co-operation programmes should be established between developed and developing countries in order to bring about the manufacture of essential factory components, spare parts, machinery and equipment in the developing countries.

2.05 In order to determine and outline the specific action required to be taken by all concerned in relevant developing countries, UNIDO is expected to undertake an evaluation survey. Hence this study.

2.06 TERMS OF REFERENCE

The expert is specifically expected to:

i) Visit several vegetable oil factories, review their technical capacities and determine the type of machinery, equipment, spare parts, piping, fittings, instruments, etc. which have to be made available.

ii) Review new investments in the vegetable oil industries sector presently under execution or planned and determine those types of equipment, installation, etc. which would be profitable to manufacture locally.

iii) Visit a number of local engineering workshops, review their organization, the existing manufacturing facilities and the available expertise and manufacturing know-how.

iv) Review the capability of the local engineering industry to develop new designs, study the available facilities and expertise in the preparation of construction plans, workshop and other drawings and comment on the industry's capability to appropriately utilise relevant know-how received from partners abroad.

v) Review the local engineering industry's capability to carry out factory construction work from the civil engineering point of view and also their capability to carry out the installation of equipment and machinery, piping, wiring and other relevant technical and electrical installation work.

vi) Draw conclusions from the studies and surveys as mentioned above and determine type of foreign assistance required and in what special fields in the order of priority with a view to enabling the local engineering industry to manufacture that equipment, machinery, spare parts and other installations required by the vegetable oil industry and to suitably maintain and service it.

2.07 The expert will also be expected to prepare a final report, setting out the findings of the mission and recommendations to the Government on further action which might be taken. The expert conducted the study in Nigeria from 21 February to 18 March 1982.

2.08 VEGETABLE OIL INDUSTRY IN NIGERIA

The vegetable oil industry in Nigeria used to be the major source of export earner, before the commercial exploitation of petroleum. The industry has deteriorated badly since 1970 and now have become a net importer. The decline in exports was due to the growth in domestic consumption exceeding the production growth from drought. ageing and neglected oil palms management problems in state-owned oil palm plantations.

2.09 Nigeria produces mainly oil palm, groundnut, cottonseed, soya beans, cocoa butter from cocoa, and benniseed, the more important being oil palm, groundnut and cottonseed. Because of the economic importance of vegetable oil industry, various Produce and Marketing Boards were established in the early sixties to control the supply of raw materials to the industry and handle exports. At that time, Nigeria was the world's major supplier of palm oil and palm kernel oil, supplying around 186,000 tons per year or over 20 per cent of world output. The exports of groundnuts at that time amounted to 700,000 tons to 900,000 tons per year. Today, except for small quantities of palm kernel exported all other vegetable oilseeds and oils are imported. It was estimated that in 1981, 150,000 tons of vegetable oils imported into Nigeria.

2.10 OIL PALM INDUSTRY

There are 133 small palm oil mills in Nigeria with a total installed capacity of 235.5 tons of FBB per hour or 1.55 million FFB per year or capable of producing 279,774 tons of palm oil per year. The list of palm oil mills together with their name, location and installed capacities are given in Annex 1. Of the 133 mills, 65 mills are now in operation. The remaining 68 are either closed down or dismanteled. The summary of the number of mills by state, their ownership and their present status are given in Table. 1.

State	Number of mills	Ownership		Status	
		Government	Private	Functioning	Non-functionin
Anambra	7	3	4	4	3
Bendel	14	7	7	9	5
Benue	1	1	0	0	1
Cross River	53	36	17	21	32
Imo	29	21	8	13	16
Lagos	3	3	0	2	1
Agun	2	1	1	2	0
Ondo	4	4	0	1	3
Rivers	20	18	2	13	7
Total	133	94	39	65	68

2.11 Presently there are 6 palm kernel crushing plants with a total installed capacity of 321,000 tons per annum. The list of the mills are given in Annex 2. Only two of the mills are now in operation. These mills process palm kernel for the Nigerian Palm Produce Board at an agreed fee per tonof raw materials crushed. In other words, these companies act as processing agents for the Nigerian Palm Produce Board. The processing cost per ton of kernel paid by the Produce Board to the companies during 1977 to 1982 were as follows:

1977	₦ 37 per ton
1978	₦ 42 per ton
1979	₦ 47 per ton
1980/81	₦ 65 per ton
1982 (January)	₦100 per ton.

2.12 The palm kernel oil produced by these companies are either exported or sold locally. Palm kernel is used locally to industrial users for making soaps, margarines and cooking oil. Lever Brothers (Nigeria) Ltd. is one of the largest local buyers of palm kernel oil.

2.13 The price paid by the Plam Produce Board for palm kernel in February 1982, to the producers was ₦ 230 per ton (or US$ 350/ton), where as the world market price was US$ 290 per ton. Therefore, it is clear that there is no incentive for Nigeria to export palm kernel or palm kernel oil to the world market.

2.14 GROUNDNUT INDUSTRY

Nigeria was one time (1960 - 1970) was one of the largest produces of groundnuts. During this period, the production of growndnuts was between 630,000 tons to 1 million tons. Due to severe drought in 1973, the production dropped to 43,000 tons. Since then the production has been low. Annex 3 give the production from 1960 - 1981. The production in 1980 was approximately 10,000 tons.

2.15 There are ten groundnut oil mills in Nigeria with a total installed capacity of 920,000 tons per annum. All of them are located in the Northern part of Nigeria, where groundnuts are grown. Except for one, namely Kano State Oil and Allied Products Ltd. in Kano, which is owned and operated by the Kano State Government, all the other mills belong to the private sector with foreign investment. The list of mills, location and their installed capacities are given in Annex 4.

2.16 Of the ten mills, four have completely closed down due to lack of raw materials for crushing. The remaining six mills crush partly the other oilseeds available such as cottonseed, soyabeans, etc. and/or involved in packing and marketing of imported refined - deodourized vegetable oils.

2.17 COTTONSEED

Cottonseed production in Nigeria was 140,000 tons in 1974/75 and dropped to 70,125 tons in 1975/76. The production in 1978/79 was 117,291 tons. There are two ginneries in Nigeria, one located in Kano State, namely "State Kano Ginnery" and the other in Kaduna State, namely B.C.G.A. Nigeria Ltd. at Zaria. There is one mill in Fantua establisned exclusively for cotton-seed processing known as "Funtua Cottonseed Crushing Co". Due to shortage of oilseeds, majority of the oil mills in Nigeria have commenced multi-seed crushing.

2.18 COCONUTS

Coconut is a minor crop in Nigeria. Lagos State Governemnt as well as the Palm Produce Board in Calabar have placed top priority for coconut cultivation in areas where coconuts could be grown. Lagos State Government has recently established 10 tons per day copra crushing plant in Badagry (60 km from Lagos City). The areas identified as suitable for coconut cultivation are Badagry, Eje, Ijeji, Opobo, and Eket in Cross River State.

2.19 During the next National Development Programme, plans have been made to establish an integrated coconut industry in the Cross River State. The Palm Produce Board in Calabar has plans to seek UNIDO's assistance for implementation of the coconut development programme, of this project.

2.20 TECHNOLOGY USED FOR VEGETABLE OIL PROCESSING

Palm oil in most remote areas produced by traditional methods. The fresh fruit bunches are sterilized in 45 gallon drums and the sterilized bunches are pounded. The pounded fruit is boiled with water, the oil separates and rise to the top. The oil is then skimmed off and finally seperated from water. This process is inefficient and produces oil with high free fatty acid.

2.21 In certain areas, locally made power operated screw and hand presses are used. Particularly, in some private owned farms imported STORK hydraulic presses are used; where good quality oil is produced.

2.22 Of five existing plants for processing palm kernel oil, one use mechanical expellers. All others use the modern solvent extraction process

2.23 Groundnuts on a commercial scale was processed using mechanical presses imported from Rosedowns of England and Fried Krupp GmbH of West Germany. The plant at Kano State Oil and Allied Products Ltd., uses combination of both mechanical presses and modern solvent extraction process.

III. VISIT TO VEGETABLE OIL PROCESSING PLANTS

3.01 To determine the spare parts requirements of the vegetable oil industry and required scope for repair of plants and equipment ten factories and institutions responsible of vegetable oil industry development in Lagos, Kano and Calabar have been visited. The details are as follows:

3.02 VEGETABLE OILS (NIGERIA) LTD., IKORODU ROAD, IKEJA, LAGOS

The Vegetable Oils (Nigeria) Ltd. is a 100 per cent Nigerian company established in 1965 with a total investment of Naira 50,000. The company is involved in palm kernel oil production using screw presses imported from Fried Krupp GmbH, Hamburg, West, Germany. The mill consists of 20 screw presses, with a total installed capacity of 80,000 tons of palm kernel (without shells) per annum.

3.03 The present running capacity of the plant is approximately 50,000 tons of palm kernel per year. The palm kernel is supplied by the Palm Produce Board, which pays the company Naira 100 per ton for processing. There is no price paid for raw materials delivered to the company by the Board. The company acts as the processing agent for the Palm Produce Board.

3.04 MAINTENANCE AND WORKSHOP FACILITIES/SPARE PARTS

The Vegetable Oils (Nigeria) Ltd. has a workshop for both maintenance as well as fabrication of small spare parts. The workshop is not well equipped. A new lathe machine recently imported has not yet been installed in the workshop. The workshop includes a small repair shop for electrical motors and electrical devices.

3.05 Since the mill is old and the maintenance staff are not well experienced, the break down of the equipment are frequent. The vital spare parts that require frequent replacement are worm shafts, bearings, oil seeds, gaskets hydraulic arms, oil pumps, electric motors, gears, pulley belts, miscellaneous metal products nuts and bolts, welded pipes, cast iron pipes, impellers and other precision instruments.

3.06 Majority of the spare parts required are imported from abroad mostly from India and Germany. In addition, a few local engineering companies have fabricated some spare parts for the mill, although these have normally been of inferior quality. The two of the local engineering companies that have manufactured spare parts for Vegetable Oil Mills (Nigeria) Ltd. are: Roadside Engineering and Foundry Ltd. and Man Engineering Co.

3.07 Presently, approxmately 0.5 million Naira is spent annually on spare parts and maintenance. Under the present system of acting as processing agent for the Palm Produce Board, the annual turn-over is estimated around 5 million Naira; which means approximately, 10 per cent of the turn-over is spent on spare parts and maintenance. This percentage is extremely high and this amount allows the company to keep spare parts stocks only to last for 7 to 9 months. Due to lack of vital spare parts at times, considerable production time is lost. Because of the very high maintenance cost, the company is finding extremely difficult to break-even.

3.08 The present system of ordering spare parts from abroad is on an yearly basis. Any order more than 0.5 million Naira is not permitted by the Board of Directors. Spare parts that are urgently required due to enexpected breakdown are locally made. This implies a practical shut down of the plant is possible, if the right parts are not available in stock. Normally, it takes the company between 4-8 months from the time an order is placed to the time the spare parts are actually received. This period is distributed as follows:

(a) Quotation: 1 - 3 months

Spare parts from overseas manufacturers of plants equipment takes approximately 1 - 3 months to receive firm quotation. Usually, spare parts are imported either from Germany or India. It was claimed that the Indian made parts are very much cheaper than Germany spare parts, but of inferior quality.

(b) Letter of Credit: 1 - 2 months

The import documents are sent to the bank for opening Letter of Credit. Spare parts worth more than Naira 10,000 needs Central Bank approval. The usual delay is 1 - 2 months.

(c) Manufacture of Spare Parts, Packing, Shipment and Final Delivery to Factory Site: 2 - 3 months

After Letter of Credit has been opened, 2 - 3 months time is needed for manufacture of spare parts, packing, transportation (by sea), customs inspection and clearance and final delivery to factory site.

3.09 The management of the compay claimed that presently, they do not face difficulties in importing spare parts as in the past. Previously, the usual delay in processing Form M (pre-inspection procedure form) with Central Bank of Nigeria for spare parts and raw materials was 3 - 4 months, which was withdrawn by the Federal Government from 1 April 1980.

3.10 MAJOR CONSTRAINTS

The existing palnt is old and the breakdown is frequent. The spare parts are not readily available in stocks due to financial constraints (company's policy not to keep more than 10 per cent of the annual turn-over in spare parts stock).

3.11 Frequent power-cuts and high cost of electricity supply.

3.12 Lack of incentives given by the Government to imporve their existing efficiency. The present system is to act as processing agent for Palm Produce Board.

3.13 NEW INVESTMENT IN SOLVENT EXTRACTION PLANT

Due to low extraction efficiency of the existing mechanical process, high maintenance cost and high power consumption, the management is seriously considering to invest on a 100,000 tons per annum (palm kernel) solvent extraction plant. This will enable the company to reduce the operating costs as well as increase the oil extraction efficiency.

3.14 The existing mechanical presses will be used for pre-pressing, which means the wear and tear (or the breakdown) will be less and the spare parts requirement will also be reduced. The spare parts requirement for the solvent extraction plant is considerably less.

3.15 According to the management of the company, tenders have already been invited from De Smet of Belgium for building a solvent extraction plant (100,000 tons palm kernel per year) as a turn-key project.

3.16 ASSAN INDUSTRIES LTD.

This is a joint venture company (Nigerian/Indian), presently involved in textile, food processing and sugar cubes making and located at 44, Town Planning Way,Ilupeju. Due to shortage of vegetable oils in Nigeria, the company is planning to set-up a vegetable oil refining plant for making cooking oils using imported crude oils. The feasibility study is presently being conducted and no decision have been made as to the origin of the plant to be imported for refining oils.

KANO

3.17 NORTHERN EXPELLERS LTD.

This is a 100 per cent British company set-up in 1952 for production of vegetable oils and cake with an installed capacity of 70,000 tons of groundnuts/cottonseeds per annum. The plant consist of 14 Rosedown Expellers. Due to shortage of raw materials, the plant has been shut-down.

3.18 Presently, the company is run with Nigerian participation and is involved in packing imported refined/deodourized vegetable oils for the local consumer market.

MAINTENANCE AND WORKSHOP FACILITIES/SPARE PARTS

3.19 The Northern Expellers Ltd. has a small workshop for maintenance and for turning out simple spare parts. A total of eight people work in the workshop, consisting of turners, shaperman, drillers, welders, millers, mechanics, and electricians.

3.20 Except for simple spare parts, which are turned out in their own workshop, all other spare parts are imported from Rosedowns Ltd. England. The usual spare parts imported from abroad are brushes for the worms, bearings, electric motors, oil seals, knvies, main shafts, distance piece, shoe bar, feed worm, packing worm, pressure cone, spur pinion, kettle shaft, welding strip etc. Usually, the company maintain a stock to last one year. Presently, because of the shortage of raw materials, the plant is operated 2 - 3 months per year for the last seven years and the spare parts required is considerably less. The company for the last seven years have not faced any difficulties in procuring spare parts.

3.21 KANO STATE OIL AND ALLIED PRODUCTS LTD.

This company was established in 1973 and owned jointly by the Kano State Government (55 per cent share) and private ownership (45 per cent). The plant consist of mechanical presses (for prepressing) followed by solvent extraction plant with an installed capacity of 500 tons of oilseeds per day. The plant was originally established to process mainly groundnuts, but due to short supply of groundnuts, the plant diversified its activities to crush other oilseeds such as cottonseed, sunflower seeds, soya beans and palm kernel oil.

3.22 The mechanical presses were imported from Simon-Rosedowns Ltd. of England and the solvent extraction plant from Speichim Ltd. of France. Due to shortage of raw materials, the plant was idle for about two years. In the last season about 10,000 tons of groundnuts was produced and the entire quantity was processed by this mill. The problem faced by this company, which is claimed as the largest plant in the black Africa is the short supply of raw materials.

3.23 P.S. MANDRIDES AND CO. LTD.

This company is a subsidiary of John Holt Ltd. and established in 1949. The company has another mill in Maiduguri established in 1964. The plant consist of mechanical presses imported from Simon-Rosedowns Ltd. of England with an installed capacity of 250 tons of oilseeds per day. Due to shortage of raw materials, the mill has ceased production since 1977. Now this company is involved in packing vegetable oils imported from abroad for local consumer market. The oil is marketed as cooking oil under the trade name "Pyramid".

3.24 NIGERIAN PROCESSING CO. LTD.

The Nigerian Processing Co. Ltd. is a British company established for groundnut processing and selection roasting for local sales and exports. The processing units consist of mechanical presses imported from Simon-Rosedowns Ltd. of England with an installed capacity of 100,000 tons of groundnuts per annum. Due to shortage of raw materials, the mill has ceased production since 1977. This company is now one of the largest importers of refined deodourized vegetable oils for packing locally.

CALABAR

3.25 PIONEER PALM OIL MILLS SCHEME

This plant was established in 1955 for the production of palm oil. The capacity of the plant is 1.5 tons of fresh fruit bunch per hour. At the time of the visit, the plant was closed down.

3.26 NIGERIAN PALM PRODUCE BOARD, CALABAR

The Nigerian Palm Produce Board is a commodity board established under the Federal Military Government of Nigeria's Decree 29 of 1977. The board is responsible for development and improvement of palm oil, palm kernel and coconut industry. The board is also responsible for the following functions:

(a) for purchase of farmers' produce at government fixed price (incentive price):
(b) for domestic marketing and export of palm oil, palm kernel and copra;
(c) assisting farmers with supply of fertilizers, high yielding seedlings and information on improved cropping practices.

3.27 The Nigerian Produce Board has its headquarters in Calabar and is presently involved in purchases of palm kernel from the producers. The purchased palm kernels are sent to the millers for processing into oil at a fee fixed by the Produce Board. The baord is responsible for the sale of palm kernel oil and cake in the local and overseas markets.

3.28 The board also propose to establish 21 new small-modern palm oil processing plants for the small-holders. Plans have already been made by the board to set-up new integrated oil palm and coconut industries.

3.29 At the time of the author's visit to Calabar, majority of the palm oil processing plants run by the Government have been closed down due to management problems. Negotiations are in progress at the time of the visit between the Government and private sector companies to reactivate these plants under joint venture agreement.

3.30 NIGERIAN GROUNDNUT BOARD

The Nigerian Groundnut Board has its headquarters in Kano. This board is also set-up under the Decree 29 of 1977. The functions of the board are similar to that of the Nigerian Palm Produce Board.

3.31 Presently, the board purcahses groundnuts from the farmers at ₦ 450 or US$ 684 per ton of groundnut, where as the world market price is US$ 450 per ton. Even at this high guaranteed price, the production is low. In 1981, the total production of groundnuts was not more than 10,000 tons (based on the purchases made by the Groundnut Produce Board). The low production may be attributed to the following reasons.

(a) with commercial exploitation of petroleum, migration of rural farmers to urban areas for other employment opportunities other than growing groundnuts.

(b) due to scarcity of labour in the farm areas, the labour cost is high and the land-owners lack cash to pay for labour and other farm inputs. Hence the farmers look for production of other cash and food crops which require less labour and other inputs.

Other factors such as variations in the annual rainfall, coupled with increase in population have contributed to decrease in amount of groundnuts available for industrial purpose (mills) and exports. In addition, government policy to allow imports of vegetable oils without any import duty at the world market price has also contributed to low production. The local price of groundnuts is US$ 684 per ton, where as the world market price is US$ 450 per ton. Millers in Kano make more money in importing, vegetable oils at the world market price and selling locally, rather than buying groundnuts locally at a price far above the world market price for crushing.

3.32 DEVELOPMENT PROBLEMS OF THE VEGETABLE OIL INDUSTRY

The Nigerian Vegetable Oil industry is a very important industry and hence it is absolutely necessary to have a long-term policy for the development of oils and oil-based industries. There are too many oil mills in Nigeria to have a flourishing industry. There are about 133 palm oil mills with an annual installed capacity of 279,774 tons of palm oil. Majority of the oil mills are small and traditional cottage industry type, where oil extraction efficiencies are low and produces low quality oil. In the groundnut crushing sector, the milling installed capacity is 920,000 tons per annum and the seeds available for crushing last year was approximately 10,000 tons. Most of the plants have been shut down and few have switched over to other oilseeds crushing and/or involved in packing of imported oils for the local market.

3.33 There are a number of problems to be solved for promotion of this industry. They are:

(i) Presently, there is no single agency solely responsible for vegetable oil industry development, which includes production, procesisng, marketing and research. The successful development of the industry depends on planning and attention devoted to the vegetable oil industry by the Government and the type of co-operation they can get from the vegetable oil producers and processors.

(ii) The present government policy, particularly in the State of Kano generally favoured the interest of the millers or processors, over that of producers and consumers. Revival of the industry depends on the policy to be adopted by the government to strike a balance among producers, processors and consumers.

(iii) In order to encourage cultivation of oilseed crops, government should provide strong institutional support to help farmers to obtain credits, high yielding seedlings and information on improved cropping practices.

(iv) The oil palm processing industry should be modernized and concentrate as far as possible in amalgamation or merger of smaller industries.

(v) To seek foreign assistance or collaboration for few years to teach Nigerian oil palm producers how to increase oil palm production, increase efficiency in oil milling and improve the quality of the oil produced.

(vi) Effective quality control of edible oils is recommended to prevent unhygienic stored and processed unrefined oil to be offered for human consumption.

(vii) Use of cheaper non-edible oils in the soap industry should be encouraged (if necessary through imports) so as to spare the expensive good oils for edible purposes.

IV. SOME IMPORTANT ASPECTS OF REAPIR AND MAINTENANCE

4.01 The preventive maintenance system for industrial plants and equipment exists in all developed countries. Plants and equipment is the techno-economic potential and vital part of a company's or industrial concerns' main function. In this connection, engineers, technicians and workers play a vital role in the equipment proper operation and its longer life.

4.02 Proper operation of plants and equipment results in lower maintenance cost and bigger out-put. During operation machines loose their working capacity, because of wear and tear of some parts, resulting in poor precision, smaller capacity or productivity. The recovery of these important qualities is effected through repairs, replacement of worn out parts and adjustment of mechanisms.

4.03 The preventive maintenance system consists of preventive inspection and planned repairs. It can be minor repairs, medium repairs or capital repairs.

(a) Minor repairs: This is a kind of planned repair maintaining the normal operation of a unit (up to the next planned repair) by replacement or restoration of worn-out parts and adjustment of mechanisms;

(b) Medium repairs: It is also a kind of planned repair responsible for part dismantling of the unit, overhaul of some mechanisms, replacement and recovery of main worn-out parts, assembly, adjustment and load test.

(c) Capital repair: Here the work involves full dismantling of a unit, replacement of worn-out parts and mechanisms, repair of base and other parts and mechanisms, assembly, adjustment and load test of units.

The last type is the emergency repair, which is caused by accidental break-down of equipment or not envisaged by the annual repair plan. With the efficient preventive maintenance system, this repair should take place very rarely.

4.04 The time and sequence of above repairs are determined depending on type of machine, its design size and operation duty. The preventive maintenance of equipment reduces its wear and tear, prevents accidental break-downs and facilitates timely fulfilment of reapir maintenance works.

4.05 In between the above repairs, the plants and equipments need attendance. This attendance covers observations of plants and equipment operating conditions given by the manufacturers, especially for control gear, protective guards and oiling devices and also duly removal of minor defects and adjustment of mechanisms. This repair/attendance is carried out by workers responsible for the units and by shift duty personnel such as fitters, electricians, oilers, etc. during interruptions in a unit operation without disturbance of production process.

4.06 PLANS FOR REPAIR AND MAINTENANCE

Plans includes compilation of typical flow charts of assembly and dismantling of aggregates, fabrication or procurement of most complex parts and drawing up a defects sheet. The latter is a master sheet which must be made up in capital repair and also in medium repair with over a year period. This sheet is drawn up by a repair foreman. The preliminary defects sheet is made up 2 - 3 month before shut-down of plants and equipment for repair during a planned inspection. The master sheet is finalized during the dismantling of plants and equip-

ment for capital and medium repairs. The preparation work include timely procurement or fabrication of spare parts to replace the worn-out ones, supply of tools and devices, materials and purchased items. The stock of parts in the store should be adequate to do all kinds of plants and equipment repair and maintenance.

4.07 WORKSHOP FOR MANUFACTURE OF SPARE-PARTS

The workshop for fabrication of spare-parts should be equipped with series of modern technological machineries to make wide nomenclature of parts in small batches. The workshop should have provisions for working castings, some of which could be made from other local workshops for fabrication of various vessels for refineries, production of heat treated gears, bolts, screw, nuts, for electro-plating, chrome plating, nickel, copper plating and steeling. In addition, the workshop should have provision for fabrication of small parts for various apparatus and repair of electrical motors and electrical devices.

In order to cater the above needs, the workshop should have the following sections:

(i) Foundry;
(ii) Pattern;
(iii) Mechanical Assembly;
(iv) Boiler welding;
(v) Forging and heat treatment;
(vi) Corrosion prevention;
(vii) Tool room
(viii) Grinding
(ix) Gear cutting
(x) Galvanic
(xi) Small parts fabrication
(xii) Electrical repair workshop

4.08 Above all there should be at least 30 skilled foremen and workers available ranging from workshop foremen, chargehand, turners, shaperman, drillers, welders, millers, fitters blacksmith, hammerman, helpers and unskilled labour.

4.09 Lastly the list of vital spare parts needed and their drawings should be made available to the workshop.

V. LOCAL ENGINEERING INDUSTRIES

5.01 Except for few heavy metal industries, such as iron and steel plants, all other major engineering industries in Nigeria belongs to the private sector. Some of the larger iron and steel basic industries are established with foreign collaboration, mostly British, Swiss, Italian, American, Lebanese, Chinese, Greek and Indians. Types of products manufactured by the private sector engineering industries range from round, flat and angle sheet bars, metal and steel construction of tankers, window and door frames, corrugated iron and aluminium, hoes, knives, iron gates, truck boxes, palm oil processing machineries, enamelware products, springs (bed components), nuts and bolts, screws steel rods, wires, lorry bodies, trailers, metal doors and windows, safety razor blades, forks/spoons, steel drums, metal boxes and containers, galvanzied corrugated iron sheets, barges, agricultural implements, motor parts, clutch plates, brake disc pads, break linings, bread rollers, palm kernel crackers, cassava grater, grinding mills, bored block making machines, pepper mills, sewing machine assembly, food processing equipment, switch gears, switch panels, assembly plant for radios, TV sets, bottle coolers, TV cabinets, air conditioners, refrigerators, etc.

5.02 Other than the above engineering industries, there are small and medium engineering workshops involved in repair maintenance and servicing of industrial machines, spare parts making, electric motor/amature winding, etc. In some places, manufacture of small engines, complete units of simple agricultural machinery, electrical goods and food processing machineries have been made in the past. Some of these workshops have now been closed down due to competition from cheaper items imported into the country.

5.03 Local engineering industries are not protected by the government. Due to high inflation in the country, local cost of production is extremely high. It is claimed that imported items are found to be cheaper even after imposing an import-tax of 100 - 150 per cent. There are certain items, imports of which are totally banned by the government, but enters the country by unofficial means. Thus creating severe competition to the local industries, some which are now on the verge of closing down.

5.04 A number of engineering workshops involved in spare parts manufacture as well as other engineering items, were visited. Some features of the progress made and constraints in further development of the industries are described below on an individual basis.

(i) ROADSIDE ENGINEERING AND FOUNDRY LTD.

This workshop is located at 29, Industrial Avenue, Ilupeju. This workshop is owned by Mr. E.A. Soteye, present Managing-Director and his family. The total investment to-date in this workshop is Naira 6,446. The owner is an ex-employee of Nigerian Government Railway and the workshop was started in 1951.

This workshop is used both as repair workshop for machineries used in industry, construction and agriculture as well as for making any type of spare parts, usually made to order. The workshop is equipped with metal processing, machine tools including lathe, multiple spindle hobbing machines and gear cutters and foundry. The past order records indicated they have made to order floating bushes, all types of gear wheels (both cast iron and brass), V-pulley, piston heads and many other spare parts, according to samples provided. This workshop also specializes in making Corn Grinding Mills. The selling price of the locally made grinding mill is Naira 500.

A total of 11 workers are employed by this workshop of which four are skilled workers and seven unskilled workers. The skilled workers' wages range from Naira 250 to 350 per months depending on their work experience. The unskilled workers' salary range from Naira 150 to 180 per month. According to the Managing Director, all the raw materials, except for coke (which is imported) are locally obtained.

Some of the problems faced by this workshop are as follows:

(a) Due to free imports of spare parts under Open General Licence (OGL), there is no demand for local spare parts.

(b) Lack of protection of the local industry. The duty payable for spare parts imported into Nigeria is five per cent, which means the locally fabricated spare parts are costly than the imported ones. In addition, the life span of the locally fabricated parts are generally shorter.

(c) High production cost due to low output by the workers and under-utilization of capacity.

(d) Inadequate financial resources.

(ii) NIGERIAN FOUNDRIES LIMITED

This is a Nigerian-Canadian joint venture company located at 1, Adeyemi Bero Crescent, Ilupeju Industrial Estate, Lagos. The foundry specializes in the manufacture of cast iron products. The products include cast iron covers, gratings, frames, cast iron fittings, for PVC pressure pipes, pipelines equipment and accessories, cast iron fittings for asbestos cement pressure pipes and cast iron flanged pipe fittings.

Some of the skilled workers and supervisors are given overseas training in Canada and England. Unskilled workers are paid Naira 200 per month and skilled workers Naira 300 per month plus other fringe benefits such as medical, housing, etc.

According to the Managing Director, the products manufactured by the company are facing severe competition from imported items that enter Nigeria on an unofficial basis. In some cases, the duty payable is so low that the imported items are cheaper than the locally produced items. Due to high inflation in the country, wages paid to the workers are high and also the currency Naira is over rated. Hence the cost of local production is high.

(iii) ADEOLA TECHNICAL LTD.

The workshop is located at 49, Princes Street, Lagos. The workshop is owned by Mr. E. O. Allinson and family and established in 1964. The capital invested up-to-date in the workshop is approximately Naira 100,000. This workshop specializes on making bread roller, palm kernel cracker, cassava grater, nuts and bolts and any type of spare parts provided samples are given to him.

The problems faced by this workshop are as follows:

(a) Lack of sufficent space to expand the workshop. The workshop is now located in the back yard of a residential house.

(b) Inadequate financial resources. The owner has made several attempts to obtain loan from the Government to expand his activities and was unsuccessful.

(iv) KOSEBINU TECHNICAL ENGINEERING CO.

This workshop was closed down six months ago due to lack of market for spare parts and machines. The workshop was located at 96, Odunfa Street, Lagos. In the past the workshop specialized in making bread rolling machine, palm kernel crackers, paper mills and spare parts.

(v) SUPER ENGINEERING CO. LTD.

This workshop was owned and operated by Hongkong chinese and specialized in making all types of spare parts for machineries used in construction, industry and agriculture. This company was located at the Industrial Estate at Ikeja and establishe in 1968.

According to the Managing Director of the Company, M Mr. M. Lee, the workshop was closed down three months ago and they have sent back all their skilled technicians back to Hong Kong. The main reason for closing down was due to lack of market for locally fabricated spare parts. The Governemnt allows free import of spare parts from abroad under Open General Licence. In other words, the Government do not protect local industry or provide incentives for further development.

CONCLUSIONS

5.01 Based on the findings, there have been a steady growth of engineering industries during the last decade. In general the Government has endeavoured to promote both large and small-scale industries. But, no protection and incentives have been extended to enterprises working with domestic capital. The aim of the Government should be to increase productive capacity so as to reduce imports and increase export earnings.

5.02 Recently a steel plant has been estalbished at Katsina, Kaduna State by the Nigerian Federal Government at a cost of 395 mil .on Naira. It was estimated that the cost of a ton of steel produced at Katsina will cost between ₦ 500 to ₦ 600 compared to imported steel ₦ 200/ton. Here again, unless there is protection, this factory is bound to be idle. There are a number of local private companies finding extremely difficult to stay in business due to lack of protection and incentives given by the Government. Recently, Dunlop Co. has closed down operation due to severe competition from imported tires. Due to high inflation in the country, cost of local production is high, hence the imported items are cheaper, unless high import duties are levied.

5.03 PROBLEMS OF THE PRIVATE ENGINEERING WORKSHOPS/COMPANIES

Many of the engineering workshops are not in a position to face competition from imported items and are therefore, meeting great difficulties in maintaining operations.

5.04 There are other limiting factors and problems facing the engineering industries as a whole.

(i) high production cost and inadequate quality control in the production process in the small industries;

(ii) lack of trained man-power and low out-put by the workers;

(iii) inadequate financial resources in the small-scale manufacturing sector;

(iv) lack of incentives given by the Government to expand or diversify their present activities.

VI. LOCAL CONSTRUCTION COMPANIES

6.01 There are a large number of private companies involved in all types of construction work including housing, factory building and plant installations. Majority of them are foreign companies collaborating with local partners and employing local engineers and technicians. Some of the local companies also act as agents for foreign plants and equipment manufacturers. In such cases, the plan for construction of the facotry, plant layout, specifications etc. are given by the manufacturers.

ANNEX I

NIGERIAN PALM PRODUCE BOARD

STATUS OF PALM OIL MILLS IN NIGERIA

ANAMBRA STATE

S/No	TYPE OF MILL AND CAPACITY	LOCATION		OWNERSHIP		STATUS		REMARKS
		VILLAGE	L.G.A.	GOVT.	PRIVATE	FUNCTIONING	NON-FUNCTIONING	
1.	Pioneer Oil Mill (1.5 tonnes ffb/hr.)	Akpu	Aguato	-	Private	Functioning	-	Owned by Chief E.C.I. Onuigbo
2.	Pioneer Oil Mill (1.5 tonnes ffb/hr.)	Emugu Abor	Aguato	-	Private	-	Non-functioning	-"-
3.	Pioneer Oil Mill (1.5 tonnes ffb/hr.)	Owerre-Ezunaka	-"-	-	-do-	-	Non-functioning (Discarded)	Owned by Chief T.U. Nadu
4.	Pioneer Oil Mill (1.5 tonnes ffb/hr.)	Ozalla	Ukanu	-	-do-	-	Non-functioning	Owned by Charles Eze
5.	Pioneer Oil Mill (1.5 tonnes ffb/hr.)	Amanasa	Awka	A.D.C.	-	Functioning	-	-
6.	Pioneer Oil Mill (1.5 tonnes ffb/hr.)	Ozubulu	Nnewi	A.D.C.	-	-"-	-	-
7.	Pioneer Oil Mill (1.5 tonnes ffb/hr.)	Okija	Ihiala	A.D.C.	-	-"-	-	-
	TOTAL	-	-	3	4	4	3	-

NIGERIAN PALM PRODUCE BOARD

STATUS OF PALM OIL MILLS IN NIGERIA

BENDEL STATE

S/NO.	TYPE OF MILLS AND CAPACITY	LOCATION		OWNERSHIP		STATUS		REMARKS
		VILLAGE	L.G.A	GOVT.	PRIVATE	FUNCTIONING	NON-FUNCTIONING	
1.	Pioneer Oil Mill (1.5 tonnes ffb/hr.)	Igbinidaka	Okpe	-	Igbinidaka Community	-	Non-functioning	Deactivated but could be rehabilitated
2	Pioneer Oil Mill (1.5 tonnes ffb/hr.)	Gbokoba	Okpe	-	Co-operative	-	Non-functioning	-do-
3.	Pioneer Oil Mill (1.5 tonnes ffb/hr.)	Arharbarien	Ughelli	-	F.M.P.C.S.	Functioning	-	Intermitten breakdown
4.	Pioneer Oil Mill (1.5. tonnes ffb/hr.)	Ovwereseomu	Ughelli	-	F.M.P.C.S	Functioning	-	-do-
5.	Pioneer Oil Mill (1.5 tonnes ffb/hr.)	Orie-Abraka	Ethiope	-	Oria Community	-	Non-functioning	Deactivated Could be rehabilitated
6.	Pioneer Oil Mill	Agbarho	Ughelli	-	Agbarho Community	Functioning	-	Functioning
7.	Pioneer Oil Mill (1.5 tonnes ffb/hr.)	Gbokodo-Ekpan	Ethiope	-	Gbokodo Community	-	Non-functioning	Deactivated
8.	Pioneer Oil Mill (1.5 tonnes ffb/hr.)	Amukpe Sapele	Okpe	Govt. Oil Palm Co.	-	Functioning	-	-
9.	Stork ~~Pioneer Oil~~ Mill (10 ton.ffb/hr.)	Ajagbodudu	Warri	Govt. Cowan Estate	-	Functioning	-	Frequent Breakdown of parts.

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Status of Palm Oil Mill in Bendel State (Contd.)

S/NO.	TYPE OF MILL AND CAPACITY	LOCATION		OWNERSHIP		STATUS		REMARKS
		VILLAGE	L.G.A	G O V T.	PRIVATE	FUNCTIONING	NON-FUNCTIONING	
10.	Pioneer Oil Mill (1.5 tonnes ffb/hr.)	Iselegun	Ndokwa	Govt.	-	-	Non-functioning	Deactivated. Could be rehabilitated Near Ndukwa Oil Palm Estate
11.	Pioneer Oil Mill (1.5 tonnes f/hr.)	Ibusa	Oshimili	Govt. Oil Palm Company	-	Functioning	-	Recently rehabilitated by Bendel Oil Palm Co.
12.	Pioneer Oil Mill (1.5 tonnes f/hr.)	Ubalu-Ukwu	Aniocha	-"-	-	-do-		-do-
13.	Pioneer Oil Mill (1.5 tonnes f/hr.)	Fwohimi	Agbazilo	-"-	-	-do-	-	-do-
14.	Nigerian Ins. For Oil Palm Research(NIFOR) (i) Pioneer Oil Mill 3 tonnes ffb/hr.	NIFOR	Ovia	NIFOR	-	-do-	-	All two at NIFOR main station.
	(ii) Stock Mill 9 - 10 ton.ffb/hr		-	-	-	-do-	-	
	TOTAL	-	-	8	7	10	5	-

NIGERIAN PALM PRODUCE BOARD

STATUS OF PALM OIL MILLS IN NIGERIA

BENUE STATE

S/NO.	TYPE OF MILL AND CAPACITY	LOCATION		OWNERSHIP		STATUS		REMARKS
		VILLAGE/SITE	L. G. A.	PUBLIC	PRIVATE	FUNCTIONING	NON-FUNCTIONING	
1.	Pioneer Oil Mill	Aliade	Idah	N.N.D.C. (Former)	-	-	Yes	Completely dismantled
	TOTAL	-	-	1	-	-	1	-

NIGERIAN PALM PRODUCE BOARD

STATUS OF PALM OIL MILLS IN NIGERIA

CROSS RIVER STATE

/No.	TYPE OF MILL AND CAPACITY	LOCATION		OWNERSHIP		STATUS		REMARKS
		VILLAGE	L.G.A.	GOVT.	PRIVATE	FUNCTIONING	NON-FUNCTIONING	
1	Pioneer Oil Mill, (1.5 tonnes ffb/hr.)	Obiokpa	Abak	A.D.C.	-	-	Dismantled	-
2.	Pioneer Oil Mill (1.5 tonnes ffb/hr)	Ikot Edong	Abak	A.D.C.	-	-	Non-functioning	Sold
3	Pioneer Oil Mill (1.5 tonnes ffb/hr.)	Adim	Akamkpa	-	Private	Functioning		Released to owner, Mr. H. Onyekaba
4.	Rural Extraction Kit (REK) (1.5 tonnes ffb/hr.)	Ibiae Oil Palm Estate	Akamkpa	A.D.C	-	Functioning		-
5.	Ibeae Oil	Ibiae Oil Palm Estate	Akamkpa	A.D.C.	-	-	—	A Mill is currently in building
6.	Pioneer Oil Mill (1.5 tonnes ffb/hr.)	Calaro Oil Mill Palm Estate	Akamkpa	A.D.C.	-	-	Non-functioning	-
7.	Major Mill (2 tonnes ffb/hr.)	-"-	-"-	A.D.C.	-	Functioning	-	Serves as Standby Mill
8.	Stock Mill (12 tonnes ffb/hr.)	-"-	-"-	A.D.C.	-	Functioning	-	-
9.	Pioneer Oil Mill (1.5 tonnes ffb/hr.)	Kwa Falls Oil Palm Estate	Akamkpa	A.D.C.	-	-	Non-functioning	-

Status of Palm Oil Mills in Nig. (C.R.S.) Contd.

S/NO	TYPE OF MILL AND CAPACITY	LOCATION		OWNERSHIP		STATUS		REMARKS
		VILLAGE	L.G.A	GOVT.	PRIVATE	FUNCTIONING	NON-FUNCTIONING	
10.	Major Mill (2 Tonnes ffb/hr.)	Kwa Falls Oil Palm Estate	Akamkpa	A.D.C.	-	Functioning	-	-
11.	Pioneer Oil Mill (1.5 Tonnes ffb/hr.)	Ikot Abia	Eket	A.D.C.	-	-	Non-functioning	-
12.	Rural Extraction Kit (REK) (1.5 tonnes ffb/hr.)	Eket Oil Palm Estate	Eket	A.D.C.	-	Functioning	-	-
13.	Pioneer Oil Mill (1.5 tonnes ffb/hr.)	Ayam Usit	Etinan	A.D.C.	-	-	Dismantled	-
14.	Pioneer Oil Mill (1.5 tonnes ffb/hr.)	Udiya	-"-	A.D.C.	-	-	Non-functioning	Deactivated
15.	-"-	Usung Inyang	-"-	A.D.C.	-	-	Non-functioning	Few parts removed
16.	Pioneer Oil Mill	Odore Atasung	-"-	A.D.C.	-	-	Non-functioning	-
17.	Pioneer Oil Mill	Iwo Etc	-"-	A.D.C.	-	-	Non-functioning	Deactivated
18.	Pioneer Oil Mill	Ataha Ofiong	-"-	-	Co-operative	Functioning	-	-
19.	Pioneer Oil Mill (1.5 tonnes ffb/hr.)	Ekpene Ukpa	Etinan	-	Private	Functioning	-	-
20.	Pioneer Oil Mill (1.5 tonnes ffb/hr)	Ete	Ikot Abasi	A.D.C.	-	Functioning	-	Needs spare parts
21.	Pioneer Oil Mill (1.5 tonnes ffb/hr.)	Ukam	Ikot Abasi	A.D.C.	-	-	Non-functioning	Deactivated
22.	Pioneer Oil Mill (1.5 tonnes ffb/hr.)	Itak	Ikot Ekpene	A.D.C.	-	-	Dismantled	-

S/No	TYPE OF MILL AND CAPACITY	LOCATION		OWNERSHIP		STATUS		REMARKS
		VILLAGE	L.G.A	GOVT.	PRIVATE	FUNCTIONING	NON-FUNCTIONING	
23.	Pioneer Oil Mill (1.5 tonnes ffb/hr.)	Nko Edino	Ikot Ekpene	A.D.C.	-	-	Non-functioning	Deactivated
24.	Pioneer Oil Mill (1.5 tonnes ffb/hr.)	Obot Akara	Ikot Ekpene	A.D.C	-	-	Dismanted	-
25.	-"-	Okon-Ikot Ama	-"-	-	Co-operative	-	Non-functioning	Needs Reactivation
26.	-"-	Ekpenyong Attai River	-"-	A.D.C.	-	-	Dismantled	-
27.	-"-	Ikot-Adakpan	Itu	A.D.C.	-	-	Non-functioning	Parts removed
28.	-"-	Itu Lepper Settlement	Itu	A.D.C	-	-	Dismantled	-
29.	-"-	Ugep	Obubra	A.D.C.	-	Functioning	-	-
30.	-"-	Ikot Usen (Iyere Bridge)	Itu	A.D.C.	-	-	Dismantled	-
31.	-"-	Mkpani	Obubra	A.D.C	-	Functioning	-	-
32.	-"-	Nko	-"-	A.D.C.	-	-	Dismantled	-
33.	-"-	Ekori	-"-	A.D.C.	-	-	"	-
34.	-"-	Ikang (Eto Mkpe)	Odukpani	A.D.C.	--	Functioning	-	in Akpabuyo county council
*35.	-"-	Ikot Eneyo	-"-	A.D.C.	-	-	Non-functioning	Water-Tank Dismantled
36.	-"-	Ikot Effanga	Odukpani	A.D.C.	-	Functioning	-	in Akpabuyo county counci
37.	-"-	Esighi	-"-	A.D.C.	-	-	Non-functioning	Parts removed

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Status of Palm Oil Mills in Nig. (C.R.S.) contd.

S/NO	TYPE OF MILL AND CAPACITY	LOCATION		OWNERSHIP		STATUS		REMARKS
		VILLAGE	L.G.A	GOVT.	PRIVATE	FUNCTIONING	NON-FUNCTIONING	
38.	Major Mill (2 tonnes ffb/hr.)	Akpap	Odukpani	A.D.C.	-	Functioning	-	-
39.	Pioneer Oil Mill (1.5 tonnes ffb/hr.)	Akpabuyo	-"-	-	Private	-"-	-	Sold to Chief J.J. Okeafor
40.	Pioneer Oil Mill (1.5 tonnes ffb/hr.)	Ediba	-"-	-	Private	Functioning	-	Sold to Chief J.J. Okeafor
41.	-"-	Ikot Ekpo Edem	-"-	-	-"-	-"-	-	Sold to Chief N. Efiom
42.	-"-	Egbe Mbube	Ogoja	A.D.C.	-	-	Non-functioning	Deactivated
43.	-"-	Katchuna-Umen	-"-	A.D.C.	-	-	-"-	-
44.	-"-	Boki (Okundi)	-"-	A.D.C.	Private	-	-"-	-
45.	Rural Extraction Kit (1.5 tonnes ffb/hr.)	Boki Oil Palm Estate	-"-	A.D.C.	-	-	-"-	-
46.	-"-	Nsadop Oil Palm Estate	-"-	A.D.C	-	Functioning	-	-
47.	-"-	Bansara Boki	-"-	A.D.C.	-	Functioning	-	-
48.	-"-	Oyubia	Oron	A.D.C.	-	Functioning	-	Also processed fruits from the Etebi's ADC Oil Palm Estate.
49.	-"-	Ibesit	Ukanafun	A.D.C	-	-	Non-functioning	Deactivated

Status of Palm Oil Mills in Nig. (C.R.S.) Contd.

S/NO.	TYPE OF MILL AND CAPACITY	LOCATION		OWNERSHIP		STATUS		REMARKS
		VILLAGE	L.G.A	GOVT.	PRIVATE	FUNCTIONING	NON-FUNCTIONING	
50.	Pioneer Oil Mill (1.5 tonnes ffb/hr.)	Ibbierebe Akpauah	Uyo	A.D.C.	-	Functioning	-	-
51.	-"-	Asutan Ekpe	Uyo	-	Co-operative	Functioning	-	-
52.	-"-	Odot	Uyo	A.D.C.	-	-	Dismantled	-
53.	-"-	Okoro Nsit	Uyo	-	Private	Functioning	-	Sold to Mr. J.S. Idoho
	TOTAL			36	15			

NIGERIAN PALM PRODUCE BOARD

STATUS OF PALM OIL MILLS IN IMO STATE

S/NO.	TYPE OF MILL AND CAPACITY	LOCATION		OWNERSHIP		STATUS		REMARKS
		VILLAGE	L. G. A	PUBLIC	PRIVATE	FUNCTIONING	NON-FUNCTIONING	
[illegible]	Pioneer Oil Mill	Anala	Obioma-Ngwa	Public	-	-	Yes	-
[illegible]	-"-	Ihie	Isiala-Ngwa	"	-	Yes	-	-
[illegible]	-"-	Obuzo	Ukwa	"	-	Yes	-	-
[illegible]	-"-	Umukalu	Ukwa	"	-	Yes	-	-
5.	-"-	Obohia	Ukwa	"	-	Yes	-	-
6.	-"-	Azumini	Ukwa	"	-	-	Yes	-
7.	-"-	Okpulor		"	-	-	Yes	-
8.	-"-	Arochukwu	Arochukwu/Ohafia	"	-	Yes	-	-
9.	-"-	Lekwesi	Isuikwuato/Okigwe	"	-	Yes	-	-
10.	-"-	Owutu Edda	Afikpo	"	-	-	Yes	-
11.	-"-	Nzerem	Mbano	"	-	[illegible]	Yes	-
12.	-"-	Umunakanu	Mbano	"	-	Yes	-	-
13.	-"-	Ugiri	Mbano	"	-	-	Yes	-
14.	-"-	Amaigbo	Nkwerre-Isu	"	-	Yes	-	-
15.	-"-	Umuduru	Mbano	"	-	-		-

.../2.

Imo State Contd.

16.	Pioneer Oil Mill	Amurie	Oru	Public	-	-	Yes	-
17.	-"-	Ubulu Ihejiofor	Oru	"	-	-	Yes	-
18.	-"-	Nekede	Owerri	"	-	Yes	-	-
19.	-"-	Umuobom	Ideato	"	-	-	Yes	-
20.	-"-	Umuimenyi	Bende	"	-	Yes	-	-
21.	-"-	Okijokwu		"	-	-	Yes	-
22.	Major Oil Mill 4 t/ffb/day	Akanu Item	Bende	-	Private	Yes	-	Owned by Senator S.M. Ojukwu
23.	Rapid Oil Mill 1 t/ffb/hr	Amaku	Isiala Ngwa	-	"	-	Yes	Owned by Mr. I. N. Okeh
24.	Pioneer Oil Mill		Obioma Ngwa	-	"	Yes	-	Owned by Chief J. Oweile
25.	-"-	Ngor Okpuala	Owerri	-	"			
26.	Stork Hydraulic $1\frac{1}{2}$ t/ffb/day	Uzuakoli	Bende	-	"	-	Yes	Owned by N. Anasonye
27.	Pioneer Oil Mill	Ozu Abam	Arochukwu/Ohafia	-	"	Yes	-	Owned by Mr. D.O. Ogbuagu
28.	Pioneer Oil Mill	Umulolo	Isukwualo/Okigwe		"		Yes	Owned by Mr. Onyekaba
29.	-"-	Abadaba	Etiti	Public	-	-	Yes	
	T O T A L	-	-	21	8	13	16	-

NIGERIAN PALM PRODUCE BOARD

STATUS OF PALM OIL MILLS IN NIGERIA

LAGOS STATE

S/NO.	TYPE OF MILL AND CAPACITY	LOCATION		OWNERSHIP		STATUS		REMARKS
		VILLAGE	L. G. A.	GOVERNMENT	PRIVATE	FUNCTIONING	NON-FUNCTIONING	
1.	Pioneer Oil Mill (1.5 tonnes ffb/hr.)	School of Agriculture	Ikorodu	Govt.	-	Functioning	-	Owned by MANR
2.	Pioneer Oil Mill (1.5 tonnes ffb/hr.)	Ehinosa	Epe	-"-	-	-"-	-	-"-
3.	Pioneer Oil Mill (1.5 tonnes ffb/hr.)	Aradagun	Badagry	-"-	-	-	Non-functioning	Inherrited from former Western Nigeria Govt.
	Sub-Total	-	-	3	-	2	1	-

NIGERIAN PALM PRODUCE BOARD

STATUS OF PALM OIL MILLS IN NIGERIA

OGUN STATE

S/NO.	TYPE OF MILL AND CAPACITY	LOCATION		OWNERSHIP		STATUS		REMARKS
		VILLAGE/SITE	L. G. A.	PUBLIC	PRIVATE	FUNCTIONING	NON-FUNCTIONING	
1.	Pioneer Mill (1.5 tonnes ffb/day)	Lomiro	Ijebu Water side	A.D.C.	-	Yes	-	
2.	Pioneer Oil Mill (1.5 tonnes ffb/day	Owode	-	-	Private	Yes	-	Owned by Prohet Odumosubo
	TOTAL	-	-	1	1	2	-	-

NIGERIAN PALM PRODUCE BOARD

STATUS OF PALM OIL MILLS IN NIGERIA

ONDO STATE

S/NO	TYPE OF MILL AND CAPACITY	LOCATION		OWNERSHIP		STATUS		REMARKS
		VILLAGE/SITE	L.G.A.	GOVT.	PRIVATE	FUNCTIONING	NON-FUNCTIONING	
1	Stork Mill (20 tonnes ffb/hr)	Okitipupa	Ikale	Govt.	-	Functioning	-	Most modern palm oil mill in Nig.
2	Pioneer Oil Mill (1.5 tonnes ffb/hr.)	Ar[illegible]omi Oba	Ikale	"	-	-	Non-functioning	Now mill is new being built by Ondo State Inv. Corp.
3	- " -	Iyanson	"	"	-	-	"	The Ondo State SMU has planned a new mill for Iyanson
4.	-	Ore/Irele	Ere	"	-	-	-	Fed.Govt. Oil Palm Estate at Ore/Irele is building a new mill.
	TOTAL	-	-	4	-	1	2	

NIGERIAN PALM PRODUCE BOARD

STATUS OF PALM OIL MILLS IN NIGERIA
RIVERS STATE

S/NO.	TYPE OF MILL AND CAPACITY	LOCATION		OWNERSHIP		STATUS		REMARKS
		VILLAGE	L. G.. A.	GOVERNMENT	PRIVATE	FUNCTIONING	NON-FUNCTIONING	
1.	Pioneer Oil Mill (1.5 tonnes f/hr.)	Abua (Otari)	Ahoada	Government	-	-	Non-functioning	Discarded
2.	-"-	Ahoada	AIGA	-"-	-	Functioning	-	-
3.	-"-	Anyama	Brass	-"-	-	"	-	-
4.	-"-	Chokocho	Ikwerre/Etche (KELGA)	-"-	-	"	-	-
5.	-"-	Ebori-Omuma	KELGA	-"-	-	"	Non-functioning	Discarded
6.	-"-	Ebocha	AIGA	-"-	-	-	"	Discarded
7.	-"-	Ebocha	AIGA	-"-	-	-	"	
8.	-"-	Elele	KELGA	-"-	-	Function.	-	-
9.	-"-	Emesu	AIGA	-"-	-	"	-	-
10.	-"-	Emesu	AIGA	-"-	-	"	-	-
11.	-"-	Isiekpe (Obodo)	KELGA	-"-	-	"	-	-

.../2.

Rivers Contd.

S/NO.	TYPE OF MILL AND CAPACITY	LOCATION		OWNERSHIP		STATUS		REMARKS
		VILLAGE	L. G. A.	GOVERNMENT	PRIVATE	FUNCTIONING	NON-FUNCTIONING	
12.	Pioneer Oil Mill	Omademe	KELGA	Government	-	-	Non-Functioning	-
13.	-"-	Omagbolu	KELGA	-"-	-	-	-"-	-
14.	-"-	Rumuji	KELGA	-"-		Functioning	-	-
15.	-"-	Rumu-koroshe	P.H. City Council Area	-"-	-	"	-	-
16.	-"-	Ubira	KELGA	-"-	-	-	Non-Functioning	-
17.	-"-	Rumuaturu	KELGA	-"-	-	Functioning	-	-
18.	-"-	Rumudiogo	KELGA	-"-	-	"	-	-
19.	-"-	[illegible] Kreigeoni	ALGA	-	Individual	"	-	Owned by Chief Adoki
20.	-"-	Yenagoa	YELGA	-	Individual	"	f	Owned by Chief L. W. Mabinton
	TOTAL	-	-	18	2	13	7	-

ANNEX II

NIGERIA'S EXISTING PALM KERNEL CRUSHING MILLS

MILL	LOCATION	NORMAL CAPACITY (TONNES)	ATTAINABLE CAPACITY (75%)
Pamil Industries Limited (PAMIL)	Abak (Cross River State)	100,000	75,000
Vegetable Oil Nigeria Limited (VON)	Ikeja (Lagos State)	80,000	60,000
Edwor Vegetable Oil Company Ltd. (EVOC)	Warri (Bendel State)	60,000	45,000
Nigerian Industries and Produce Company Limited (NIPROC)	Arondizuogu (Imo State)	45,000	37,750
Palmke Oil Mill Nigeria Limited (PALMKE)	Umunze (Anambra State)	36,000	27,000
Rivers Vegetable Oil Company Limited (RIVOC)	Port Harcourt (Rivers State)	-	-

Source: Nigerian Palm Produce Board, Calabar.

IN METRIC TONNES

ANNEX III

YEAR	PRODUCER PRICE PER TONNE	PURCHASES IN METRIC TONNE	LOCAL SALES	EXPORTS
1960/61	₦90.00	628,956	117,664	511,292
1961/62	90.00	698,994	195,108	503,889
1962/63	84.00	885,460	235,888	649,573
1963/64	78.00	799,315	194,370	604,945
1964/65	78.00	687,626	332,712	354,914
1965/66	82.00	992,957	290,928	702,030
1966/67	68.00	1,042,850	307,799	735,052
1967/68	58.00	694,660	289,171	405,489
1968/69	52.00	775,587	136,259	639,329
1969/70	60.00	655,320	354,201	289,560
1970/71	63.00	387,096	194,367	89,408
1971/72	67.60	305,816	212,671	93,269
1972/73	80.60	519,176	303,276	246,380
1973/74	94.25	42,877	42,877	- -
1974/75	165.00	162,958	163,958	- -
1975/76	250.00	2,195	2,195	- -
1976/77	250.00	12,192	12,192	- -
1977/78	275.00	50	50	- -
1978/79	290.00	184	184	- -
1979/80	350.00	8	8	- -
1980/81	420,00	10,000	10,000	- -

ISSUED BY NIGERIAN GROUNDNUT BOARD

KANO. JANUARY, 1980

ANNEX IV

Name of the mill	Location
1. Kano State Oil and Allied Products Ltd.	123, Maganda Road, Kano
2. Nigerian Oil Mills Ltd	80/82, Tafawa Belawa Road, Kano
3. Northern Expellers Ltd.	205, Mission Road, Kano
4. Agricultural Product Processing Mills Ltd.	151/152, Club Road, Kano
5. P.S. Mandrides Co. Ltd.	P. O. Box 42, Kano
6. Kano Oil Millers	83, Tafawa Balewa Road, Kano
7. Katsina Oil Mills Ltd.	P. O. Box 97, Katsina
8. Gombe Oilseeds Proc. Ltd.	Bice Road, P. M. B. 49, Gombe
9. Gusan Oil Mills. Ltd.	P.O. Box 16 Zaria Road, Gusan
10. Nguru Oil Mills Ltd.	P. O. Box 154, Nguru
11. Maiduguri Oil Mills Ltd.	Industrial Area P. O. Box 213 Maiduguri

Source: Nigerian Groundnut Produce Board, Kano

Installed capacity (tons	Remarks
180,000	After two years shut down, plant started operation in January 1982.
100,000	Plant closed down since 1976 and the company now involved in packing refined deodourized vegetable oils imported from abroad.
80,000	Plant works only 1 - 3 months per year due lack of raw materials company is also involved in packing refined deodourized oils from abroad.
80,000	Plant closed down operation in 1975.
100,000	Plant closed down. Presently involved in packing refined-deodourized vegetable oil.
50,000	Plant operate 1-2 month per year due to lack of raw materials.
60,000	Plant closed down
30,000	Plant cosed down.
50,000	Plant operate 1-3 months per year.
40,000	Plant closed down.
30,000	

ANNEX V

Production of Vegetable Oilsees and Oils in Nigeria (1974 - 1979)

(PRODUCE PURCHASED)

Metric tons

Period	Bonnisead	Cocoa	Cotton (Seed Cotton)	Palm Kernels*	Palm Oil*	Soya Beans
1974 - 75	3,919	205,000	140,026	250,000	66,000	558
1975 - 76	5,000	225,000	70,125	170,000	35,250	1,100
1976 - 77	1,802	120,865	212,376	153,724	55,200	1,607
1977 - 78	2,000	187,~~646~~	115,092	116,502	47,000	1,400
1978 - 79	..	185,123	117,291	172,892	..	..
PRODUCER PRICES + (₦ per metric ton)						
1974 - 75	264	660	308	150	265	99
1975 - 76	264	660	308	150	265	99
1976 - 77	264	660	330	150	295	99
1977 - 78	290	1,030	330	150	355	290
1978 - 79	300	1,030	330	150	355	135

Source:- Nigerian Produce Marketing Company Ltd. (dissolved) and the Commodity Boards.

Notes :- * The season for Palm Kernels and Palm Oil coincides with the calendar year.

+ Weighted averages of prices for the various grades in the various states, net of produce tax and rounded to the nearest Naira; transport and other expenses have not been deducted.

.. Not available.

ANNEX VI

List of Vegetable Oil Refineries in Nigeria

1. Lever Brothers (Nigeria) Ltd.
   Apapa, Lagos State

2. Lever Brothers (Nigeria) Ltd.
   Aba, Imo State

3. P. Z. Industries Ltd.
   Ikeja, Lagos State

4. P. Z. Industries Ltd.
   Aba, Imo State

5. Associated Industries Ltd.
   Aba, Imo State

Source: Nigerian Palm Produce Board, Calabar.

ANNEX VII

List of Persons Interviewed

Lagos

A. UNDP, Lagos

1. Mr. F. Buamann, Junior Professional Officer
   c/o United Nations Development Programme, Lagos

B. Meeting with Ministry of Industry, Government of Nigeria

1. Mr. M. P. U. Obabo, Assistant Director
   Policy and Planning Division, Federal Ministry of Industries
   Secretariat, Ikoyi
2. Mr. F. Baumann, Junior Professional Officer, c/o UNDP, Lagos
3. Mrs. Akande, Direct
   Assan Industries Lt. , 44, Town Planning Way, Ilupeju
4. Mr. Nathan, Financial Accountant, Assan Industries Ltd.
   44, Town Planning Way, Ilupeju

C. Ministry of Industry, Government of Nigeria

1. Mr. A. Adebayo, Principal Assistant Secretary
   Policy and Planning Division, Federal Ministry of Industries, Ikoyi
2. Mr. A. O. Okwara, Director, Industrial Inspectorate Division
   Federal Ministry of Industries, Ikoyi
3. Mr. G. C. Okafor, Assistant Director, Industrial Inspectorate Division
   Federal Ministry of Industries, Ikoyi
4. Mr. E. A. Fapohunda, Chief, Industrial Inspectorate Division
   Federal Ministry of Industries, Lagos
5. Mr. S. O. Omojola, Senior Industrial Inspector
   Industrial Inspectorate Division, Fed. Ministry of Industries, Lagos

D. Private Sector Vegetable Oil Industry in Lagos State

1. Mr. V. O. Ola, Managing Director, Vegetable Oils (Nigeria) Ltd., Ikeja
2. Mr. S. A. Adegbola, Plant Manager, Vegetable Oils (Nigeria) Ltd., Ikeja

E. Private Sector Workshops in Lagos State

1. Mr. E. A. Soteye, Managing Director, Roadside Engineering and Foundry Ltd.
   Industrial Avenue, Ilupeju, Lagos
2. Mr. John Barberopoulos, Managing-Director, Nigerian Foundries Ltd.
   Ilupeju Industrial Estate, Ilupeju, Lagos
3. Mr. E. O. Allinson, Workshop Assistant, Adeola Technical Ltd.,
   49, Princes Street, Lagos
4. Mr. McLee, Managing Director, Super Engineering Co. Ltd.,
   Industrial Estate, Ikeja

F. Vegetable Oil Industry in Kano

1. Mr. Christian A. Otili, Production Manager, Northern Expellers Ltd., 205, Mission Road, Kano
2. Mr. Samuel Jacobs, Factory Engineer, Northern Expellers Ltd., 205, Mission Road, Kano
3. Mr. M. T. Bahy, Managing-Director, Kano State Oil and Allied Products Ltd., 123, Maganda Road, Kano
4. Mr. W. P. Jones, Manager, Nigerian Oil Mills Ltd. 80/82, Tafawa Balewa Road, Kano
5. Mr. Haruna Atta Bundaga, Chief Accountant, P. S. Mandrides and Co. Ltd. Kano
6. Mr. Emmanuel A. I. Agum, Board Secretary, Nigerian Groundnut Board Kano
7. Mr. S. Alabi Moito, Assistant General Manager (Sales), Nigerian Groundnut Board, Kano

G. Vegetable Oil Industry in Calabar

1. Mr. U. Ochiagha, Chairman, Nigerian Palm Produce Board, Calabar
2. Mr. O. D. Akpadiaha, General Manager, Nigerian Palm Produce Board, Calabar
3. Mr. I. O. Okonna, Assistant Chief Agricultural Officer, Research Planning Unit, Nigerian Palm Produce Board, Calabar
4. Mr. C. M. Ogumdu, Principal Market Research Officer, Nigerian Palm Produce Board, Calabar.