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POTENTIAL PROJECTS FOR INVESTMENT
IN KENYA

MINISTRY OF INDUSTRY
P.O. Box 30418
NAIROBI.

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INTRODUCTION

Kenya lies astride the Equator on the eastern sea-board of Africa. It has an area of 569,000 sq. km. and a population of 15.2 million (1979) estimated to be growing at an annual rate of 3.3 per cent. The country's Gross Domestic Product in current prices amounted to US \$ 4.5 billion in 1977 and US \$ 4.9 billion in 1978. Per capita incomes for the two periods amounted to US \$ 312.60 and US \$ 333.20, respectively. The GDP has been estimated to grow at a rate of 6.7 per cent per annum.

The country is basically agricultural and agriculture continues to make the largest contribution to GDP, followed by the manufacturing sector. However, the manufacturing sector is the fastest growing sector of the economy, with an annual growth rate of 11.3 per cent recorded between 1972 and 1978.

The Kenya Government maintains a firm conviction on the role of industry as a dynamic instrument of growth, essential to the rapid economic and social development of the country. Through a system of mixed economy where both the public and private sectors have their roles to play, the Government is now shifting emphasis from the traditional import-substitution oriented strategy and steadily placing the main thrust for future industrialization on resource-based and export-oriented industries.

In order to realise the main objective of the current Development Plan for the alleviation of poverty and provision of basic needs, the Government is making deliberate efforts to hasten the development of projects in certain priority sectors, namely, Agro-processing, Chemical

and Mineral-based industries, Capital and Intermediate Goods industries. It is the development of these sectors that will create a strong and wide base for further industrialization.

The Government is further committed to attract and encourage direct foreign investment from public and private sources. Through a system of investment and trade incentives, and statutory protection under the Foreign Investment Protection Act (FIPA) of 1964, the Government has established an investment atmosphere, ideal to the needs of every foreign investor.

The general framework for industrial development and industrial policy is laid down and administered by the Ministry of Industry. The Ministry also cooperates with foreign investors in the preparation, design and planning of industrial projects in Kenya. Enquiries may be addressed to the Permanent Secretary.

/. AGRICULTURAL & FISH PROCESSING INDUSTRIES

|.1 Agro-Industries

Kenya is basically an agricultural country with 90% of her population directly involved in farming activities. In 1978, the agricultural sector accounted for 30% of Gross Domestic Product compared with 16% from manufacturing. In line with the growth of agricultural produce, the gross marketed production of agriculture has steadily increased. Agricultural exports accounts for 70% of total exports with coffee and tea being by far the most important, followed by sisal, pyrethrum and wattle extract. Other agricultural exports include meat, fruits and vegetables, dairy products, cotton, wool, cashew nuts and hides and skins.

There are good prospects for developing agro-industries to absorb the marketable surplus since most of the agricultural exports are either unprocessed or semi-processed.

The agricultural sector is important in Kenya and the necessary facilities for sustained supply of raw materials for processing have already been initiated. The country is well endowed with some of the factors that are essential for development of the agricultural sector. Twenty per cent of the land or about 12 million hectares, receive over 760 mm of rainfall per annum, well spread throughout the year. For the drier parts of the country, scope exists for irrigation as there is plenty of water from rivers, lakes and wells.

There are already facilities for the processing of agricultural produce which include grain-milling, bakery products, vegetable dehydration, fruit juice extraction and fruit canning. However, there are good prospects for installing additional capacities to produce for local and export markets. Potential export markets exist in the Middle East, Africa and Europe, particularly the EEC countries where Kenya has preferential trade arrangement under the Lome Convention. The planned investments in this sector during the current Development Plan (1979-83) are K.Shs. 3.1 billion (U.S.\$ 390 million). Priority projects in this sector include pineapple growing and processing, extraction of jojoba oil and processing of limes. Details of these are given below:

1.1.1 Pineapple Growing and Processing

Kenya is a major producer of pineapples. The production of pineapples in 1978 was 180,000 tonnes. With the unique climatic conditions, soils and variable altitude, Kenya can expand its pineapple acreage substantially.

The world demand for high value canned pineapple slices, segments and concentrated pineapple juice is steadily growing and the Kenya pineapple variety is well renowned and in great demand. With increased production of pineapples, there would be a need for new processing facilities.

The proposed project involves the development of a nucleus estate (400-600 ha.) an outgrower system (2,000-3,000 ha.) and the erection of a processing plant in the Machakos area of Kenya's Eastern Province. Initially, the project would process 30,000 tonnes of pineapples into:

- a) Whole regular slices packed in syrup.
- b) Half slices in syrup.
- c) Broken slices packed in syrup as a consumer pack, and in water, in large size containers for the institutional market.
- d) Titbits and chunks in syrup and in water as an institutional pack.
- e) Spears or fingers
- f) Crush, coarse and fine-cut for jam manufacturers, bakeries and fruit-yoghurt producers.
- g) Canned pineapple juice.
- h) Concentrated pineapple juice.

- i) Pineapple syrup, recovered from off-falls and from discarded peels.
- j) Dehydrated pineapple slices and pieces.
- k) Cattle feed, produced from the waste residue.

The plant capacity would be expanded to 60,000 tonnes and 100,000 tonnes in another two phases as the pineapple growing area is developed.

This project is tentatively estimated to cost K.Shs. 36 million (US \$ 4.8 million). Implementation of the project would take the form of a joint venture between local investors, a local financial institution and foreign partners. The Industrial Survey and Promotion Centre (ISPC) is in the process of preparing a detailed feasibility study which will be completed later this year.

1.1.2 Extraction of Jojoba Oil

The Jojoba plant (Simmondsia chinensis), of the family Buxaceae, is a xerophyte which is usually restricted to well drained, coarse, well aerated desert soils that range from neutral to alkaline with an abundance of phosphorus. It is salt tolerant and shows best development in areas of 254 to 457 mm of annual rainfall. It tolerates temperatures ranging from 0° to 47°C.

Under cultivation Jojoba plants yield oil bearing nuts in 4-7 years. The nuts contain about 50% oil which, unlike other vegetable oils which are glycerides of fatty acids and alcohols and can be used as a substitute for the ~~fast~~-vanishing sperm-whale oil. Jojoba oil requires little or no refining to prepare it for most lubricating purposes. Sulphurised Jojoba oil can be used as substitute for sulphurised sperm whale oil in gear lubricants (5-25%). It can also be hydrogenated readily to give a hard wax comparable to spermaceti wax which is used in pharmaceutical and cosmetic industries.

Conservative estimates (1976) of the short term market demand for high priced low volume Jojoba oil stand at 6 million pounds (2.7 million tonnes) ranging in price from US \$ 3-6 per pound, while the market demand for hydrogenated wax at US \$ 1 to \$ 2.30 per pound is estimated to be 13 million pounds (5-9 million tonnes). Long-term (1982-1993 demand for

low priced Jojoba oil is estimated to be 121,500 tonnes at a price of US \$ 0.4 - 0.75 per pound and for hydrogenated wax about 6,000 tonnes at a price of US \$ 1 - 2.20 per pound. Thus an annual demand of more than 127,000 tonnes is anticipated for Jojoba oil.

The project being proposed for Kenya involves the growing of Jojoba in the arid and semi-arid regions of the country. A nucleus estate of upto 1000 ha. and an outgrower system covering 2,000 ha. would be required. Already trial growing of Jojoba plantations has been started and more extensive plantations are being planned.

Jojoba yield is estimated to be 2-3 tonnes of nuts per hectare. Extraction of oil can be either by normal mechanical means or by solvent extraction. The former method is considered especially suitable for small, scale rural operations. When fully implemented, the project is expected to cost K.Shs. 23 million (US \$ 3.07 million). Preliminary investigations undertaken by the Centre indicate that initially gross revenue for the farmer would be more than K.Shs. 30,000 (US \$ 4,000) per hectare. It is intended that this project be implemented as a joint venture between local investors, a local development bank and foreign partners. The latter will be responsible for providing technical know-how, management, marketing and training of local personnel.

1.1.3 Processing of Cassava into Chips and Pellets for Export

The EEC countries import on average 6 million tonnes of cassava pellets per year from the Far East, mainly Thailand and Indonesia for use in compounding animal feeds. These imports have been increasing at the rate of 15% per annum in recent years and it is expected that the rate will be maintained in future.

Kenya which is already a producer of cassava mainly for human consumption as well as for the production of starch has a suitable climate and relatively cheap labour to enable her to penetrate the European cassava pellets market. Recently the ISPC has undertaken studies which indicate that there are good prospects for the expansion of cassava growing in the country particularly at the coast which could yield adequate quantities of cassava tubers for the production of chips initially and pellets eventually for export. The Settlement Schemes currently under development at Magarini (near Malindi) Lamu and Kilifi Central, will when finally developed bring 12,000 hectares of land under cassava yielding 240,000 tonnes annually of wet roots equivalent to about 100,000 tonnes of dry chips pellets by 1983/84.

It is intended to encourage further growing of cassava in these areas by finding markets for the cassava which is already in the ground. The proposal is to initially set up facilities for production, storage and shipping in bulk of cassava chips to Europe. The yields expected from these Settlement Schemes are estimated as under:

	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>
Cassava area (ha.)	4,773	5,905	7,166	8,683	10,190	11,704
Yield (tonnes/ha.)	5-20	8-20	10-20	13-20	15-20	15-20
Farm surplus (tonnes)	26,348	53,598	85,998	131,202	160,728	188,200
Dried chips/ pellets)	8,100	17,340	22,300	35,680	56,650	67,640

Initially chips and pellets processing will be undertaken by Kilifi Farmers Co-operative Union at Kilifi. Later a pellets factory will be set up in the Port area of Mombasa Island to facilitate bulk handling. Total investment in the project is estimated to be K.Shs. 31,800,000 as shown under:

	<u>K.Shs.</u>
Land	1,000,000
Buildings	2,000,000
Site Improvement (bulk handling facilities)	4,000,000
Machinery and Equipment	6,500,000
Installation	1,200,000
Transport Equipment	800,000
Pre-operational	1,000,000
Working Capital	15,000,000
Total	31,800,000

The project which has already been approved for implementation by the Government is being promoted by Kilifi District Co-operative Union and a local financial institution. These organizations are looking for a technical partner who will be responsible for organising the installation of the plant, management, training and marketing the product within the EEC countries.

1.4 Processing of Limes for Export

There are two acid fruits of the lime (*Citrus aurantifolia*) group which grow well in Kenya's Coast Province; the Mexican (or West Indian, Key) lime and the Persian (Tahiti) lime. The former is considered more suitable for cultivation, due to its growing characteristics and its specific flavour which is very popular in European markets.

Fruit bearing for limes under cultivation starts after the fourth year and the tree matures in six to eight years. The tree's economic life is around 40 years. Planting density should be 375 trees per ha. It is estimated that the yield per mature tree is 110 to 120 kg. of fruit per season, or 35 to 54 tonnes per ha.

Due to the small size of the Mexican lime, it is not practical to use conventional citrus extractors for juice recovery. Instead, a screw or roller-press is considered more appropriate.

A lime fruit has the following composition:

	%
Juice	55-60
Pulp, rags and seeds	36-41
Peels	11-12
Essential oil	0.2-0.3

Since 86-90% of lime juice is water, it is economically advantageous to concentrate it by evaporating the water under high vacuum maintaining boiling temperature between 40 to 45°C. A popular degree of concentration in U.K. is 9:2 which is equivalent to the Refractive Index value : 1.385 to 1.388

The minimum volume for an economically viable citrus processing plant is considered to be 10,000 tonnes of fruit per season.

This proposal is for the cultivation of 400 ha. of lime in a nucleus estate, 300 to 600 ha. in an outgrower system, and the erection of a processing plant, close to the lime growing area. This arrangement would ensure the availability of fruit for processing in excess of 14,000 tonnes per season. Waste material, mainly peels would be sold to producers of marmalades and candied fruits as well as to animal feed processors, in Kenya. When dehydrated, the peels could also be sold to producers of pectin.

The peak season for lime is only 3 months. For this processing enterprise to be viable, it would need to operate for at least 300 days per year. The plant therefore could be used to process supplementary fruits such as mangoes, bananas, passion fruit, pineapples, oranges, grape fruit and cashew apple all readily available in the Coast Province in different times of the year.

Experimental growing of the Persian Lime South of Mombasa has been successfully undertaken and indications are such that a lime processing plant would a viable proposition.

Project costs are estimated to be K.Shs. 12 million (US \$ 1,600,000). Implementation of the project would take the form of a joint venture between local investors, local financial agency and foreign partners.

1.1.5 Production of Industrial Alcohol from Sugar-cane Juice

Local production of alcohol in Kenya at present is about 5,000 tonnes per year. Most of this alcohol is used for the production of potable spirits with little quantities going to industrial uses. Currently two power-alcohol projects with a combined capacity of 60,000 tonnes annually are being implemented and the alcohol to be produced in the next 1 or 2 years will be blended with petrol for use in motor vehicles.

The alcohol projects now under implementation will utilize all the available molasses produced from the sugar factories. The increased demand of alcohol for industrial uses particularly for the production of polyvinyl chloride (PVC) and low density polyethylene (LDPE), will necessitate setting up other alcohol production units in the country. Initially these plants will utilize the surplus sugar cane available now but as the alcohol production capacities increase additional sugar plantations will be established. The proposed PVC plant with an annual capacity of 20,000 - 30,000 tonnes will use imported EDC but this will be replaced by locally produced ethylene and chlorine from a caustic soda plant. It is therefore proposed to implement an alcohol plant with a capacity of 20,000 tonnes per year and when the PVC and LDPE projects are fully operational the alcohol production capacity will be increased to 80,000 - 100,000 tonnes per year in a number of units located in sugar cane growing areas.

The first proposed alcohol plant will be located in Western Kenya with a capacity of 20,000 tonnes per year. The cost of the plant is estimated to be K.Shs. 90,000,000 broken down as follows:-

	K.Shs.
Land and Buildings	1,700,000
Plant and Machinery	77,000,000
Working Capital	<u>12,300,000</u>
	<u>90,000,000</u>

It is intended to implement this project as a joint venture between Kenyan and German investors with the latter providing technical know-how.

1.2 Fish Processing

Kenya has over 10,000 sq. km. of lakes, 3,200 km. of rivers and 640 km. of marine coast. Fish stock from these waters has a potential annual yield of an estimated 150,000 to 200,000 tonnes. In spite of this potential, Kenya is still a net importer of fish and fish products.

In the Kenyan portion of Lake Victoria, it is estimated that about 17,000 artisanal fishermen operate with 4,500 registered craft mainly on co-operative basis. However the yield is small as fishing is undertaken in shallow waters mainly using sail canoes or beach seining techniques. Consequently, shallow water species of fish such as tilapia are becoming over-fished while the major stock of fish, the haplochromis are to be found in deeper waters further offshore. The effective utilization of this resource would require the introduction of trawling methods and improved onshore handling facilities.

According to some recent estimates, marine fisheries represent more than half of the potential source of fish available for exploitation by Kenya. The bulk of marine fish landings are caught by an estimated 11,000 artisanal fishermen using 3600 registered boats. Again, as in the case of Lake Victoria the craft used at the coast are of an inferior quality, restricting fishing activity within the narrow continental shelf.

With the recent extension of Kenya's territorial waters to reflect the concept of an "exclusive economic zone" extending for 200 nautical miles offshore, there exists wide scope for well-meant exploitation of marine resources

for both local and export market. This endeavour however, can only be wholly realized through the employment of modern deep-sea fishing gear and suitable handling, storage and processing facilities.

Two proposals, one relating to the fresh-water resources of Lake Victoria and the other to Kenya's coastal waters, are discussed below.

1.2.1 Fish Canning (Mombasa)

Kenya's marine waters contain a large stock of various species of fish, including tuna. When canned, tuna becomes a high-value and desirable commodity with a very stable global market. However, due to lack of suitable deep sea trawlers, personnel and processing facilities, this resource has not been effectively exploited.

A project is proposed for the establishment of facilities to land 10,000 tonnes of tuna per year and to process this catch into 7,500 tonnes of canned fish. Alongside this project would be a small plant to process and prepare food products from shrimp, prawn and lobster. Waste material from these two lines would further be processed into fishmeal for use in Kenya's poultry industry.

In order to implement the integrated tuna canning project there is need for providing the following:-

- a) Modern 10 metre trawlers
- b) Factory including - equipment
 - buildings
 - storage facilities

Project costs are estimated to be about K.Shs. 150 million (US \$ 20 million).

It is intended that this project be implemented in the form of a joint venture between local investors, a local financial institution and foreign partners. The Industrial and Commercial Development Corporation (ICDC) would be the principal agency for organizing local participation in the project and would itself take a share in equity.

The foreign partner will be expected to participate in the project through provision of technical know-how, plant and equipment, management, training and marketing.

1.2.2. Fishmeal Project (Lake Victoria)

Lake Victoria, which is shared commonly by Tanzania, Uganda and Kenya has great, albeit under-exploited, potential as a freshwater fishery. It is estimated that fishing in the lake's deeper waters could yield a harvest of 600,000 tonnes of Haplochromis, per year. Kenya's share of this fish species (locally known as 'fulu') is estimated to be between 30,000 and 40,000 tonnes per year.

Haplochromis is considered unsuitable as a 'table' fish. However, it has superior qualities as the base material in the fishmeal industry. Fishmeal, used almost exclusively as a dietary supplement in poultry feeds, is at present an extremely high-priced import item in Kenya. In 1977, the country imported 1,300 tonnes of fishmeal at a cost of K.Shs. 5,250 (US \$ 700) per tonne, while in 1978 imports were 3,400 tonnes valued at K.Shs. 16 million (US \$ 2.15 million).

The proposed project is for the establishment of a plant to produce 6,000 tonnes of fishmeal per year. This output would all be utilized locally for compounding feed for the poultry industry. The project will involve acquisition of trawlers and the erection of a fishmeal processing plant with suitable cold storage facilities preferably at Port Southby on the shores of Lake Victoria. Project costs are estimated to be K.Shs. 5,625,000 or US \$ 750,00 as follows:

<u>Processing Unit:</u>	<u>K.Shs.</u>
Plant and machinery	1,125
Pier, unloading facilities (etc.)	375
Building, site preparation (etc.)	375
Contingency, start-up costs	375
Working capital	375
	<hr/>
Total	2,625
<u>Boats:</u>	
Four 13 m trawlers @ K.Shs. 562,500	2,250
<u>Other costs:</u>	<hr/>
	750
	5,625

This project would be implemented as a joint venture between a local financial institution and foreign partners.

It is envisaged that the project will be implemented as a joint venture involving private local investors, a local financial institution and a foreign partner who will be expected to provide the technical know-how, plant and machinery, management and marketing services and at the same time train local personnel.

2. NON-METALLIC MINERAL PRODUCTS

Industries in this sub-sector which include pottery, china and earthenware, glass and glass products, lime, cement and structural clay products are based on locally available resources. There are already two cement factories in the country with a combined capacity of 1.6 million tonnes per year. Additional processing capacities are required to produce cement for the buoyant local and export markets, as the major raw material; limestone is locally available in substantial quantities.

The two glass containers plants operating in the country produce bottles mainly for the beverage industry and other industries, where glass is required for packaging. Domestic demand for glass containers is growing rapidly and will soon outstrip the domestic supply. Importation of glass containers to meet domestic needs is not feasible as the product is bulky and fragile and therefore additional capacity is needed to utilize resources which are locally available.

The necessary raw materials required for the manufacture of sheet glass for domestic and export to our near neighbours are available broadly in sufficient quantities and quality. The local market which at present is about 7,000 tonnes is expanding rapidly and there are good prospects for exporting sheet glass to neighbouring countries as there are no facilities at present in the region for the manufacture of sheet glass.

Planned investments in this sub-sector include:

	<u>Investment K.£ '000</u>
1. Manufacture of pottery, china and earthenware	331
2. Glass and glass products	
(a) sheet glass plant	5000*
(b) hollow glassware	900*
3. Structural clay	
(a) Bricks and rooftiles project	200
(b) Expansion of capacity	200
(c) Others	282
4. Cement, lime and plaster	
(a) Cement plant	7210*
(b) Expansion of programme	7000
5. Other non-metallic products	<u>2065</u>
	<u>23,188</u>

Pottery, china and earthenware

An industry to manufacture ceramic ware ammounting to 1000-1200 tonnes per annum and covering items such as cisterns, basins etc. will be established. Other projects under study in this section include sanitary ware, wall tiles, tableware and insulators.

Structural clay - Projects under study in this heading include bricks and roofing tiles.

Cement, Lime and Plaster

A project to produce cement in Western Kenya will be established. Other cement based industries being studied include concrete blocks, roofing tiles and slabs.

Others - this includes projects being studied such as graphite processing, barytes utilization and vermiculite utilization.

2.1 Sheet Glass

The consumption of sheet glass is at present estimated to be 6,000 tonnes and is expected to rise to 12,000 tonnes by 1985. The bulk of the requirements ranges between 2 mm and 10 mm. These requirements are met through imports as there is no sheet glass manufacturing facility within the Central and East African region. The table below gives an indication of the quantities imported into Kenya between 1974 and 1978.

Sheet glass import statistics 1974-1978 (m²)

<u>Year</u>	<u>Quantity</u>
1974	461,498
1975	289,749
1976	506,567
1977	608,624
1978	1,198,982

Source: Annual Trade Reports.

Percentages of the various sizes have been estimated as:-

2mm	13%
3mm	38%
4mm	25%
5mm	12%
6mm	8%
10mm	2%
Others	<u>2%</u>
Total	<u>100%</u>

The average annual imports into the neighbouring countries such as Tanzania, Uganda, Zambia, Mozambique, Madagascar, Ruanda and Burundi exceeds 10,000 tonnes. If only a part of this market can be captured, it could amount to an export of nearly 5,000 tonnes. It is therefore proposed

to set up a plant with a capacity of 15,000 tonnes to supply the local market and also export to the neighbouring countries. The major raw materials which include silica sand, soda-ash, and feldspar are readily available in sufficient quantities and acceptable quality locally. Furnace oil and electricity are also available in adequate quantities. Investment in this project will be around K.Shs. 250 million (US \$ 35 million) as shown under:

	<u>K.Shs. million</u>
Plant & equipment	200
Land and Building etc.	25
Working capital	25
Total Capital	<hr/> <u>250</u> <hr/>

The project will be implemented as a joint venture between a local development bank, local investors and foreign investors.

2.2 Cement Plant in Western Kenya

The domestic consumption of cement, with an average annual growth rate of 11% to 12% would reach a figure of 662,000 tonnes in 1980 and 1,117,000 tonnes by 1985. As against this, the annual exports, which have shown a growth rate of 6.8% for the past ten years will be about 800,000 tonnes in 1980 and over 1,000,000 tonnes by 1985.

In view of the above estimates the demand for meeting the local and export markets will amount to 1,462,000 tonnes in 1980, rising to 2,117,000 tonnes by 1985.

At present there are 2 cement plants in Kenya with a total capacity of about 1.6 million tonnes per year. The Bamburi Portland Cement near Mombasa mainly caters for the export market whereas the bulk of the domestic requirements are met by East African Portland Cement Company at Athi River with an installed capacity of about 400,000 tonnes per year.

The demand would exceed the present capacity by 1981. It is therefore proposed to put up a plant with a capacity of about 450,000 tonnes per annum at an estimated cost of K.Shs. 400 million.

In view of the high transportation costs, the new unit is proposed to be established in Western Kenya where deposits of limestone in adequate quantities have been located.

2.3 Glass Containers

At present there are two glass containers manufacturing facilities in Kenya; one is situated in Nairobi and the other at Mombasa. These two plants have a total capacity of 25,000 tonnes.

The projected glass containers requirements for the country for the next ten years are as follows:

<u>Year</u>	<u>Number of bottles ('000)</u>	<u>Weight of bottles (Tonnes)</u>
1980	45,860	18,220
1981	49,070	19,495
1982	52,505	20,860
1983	56,180	22,320
1984	60,113	23,882
1985	64,321	25,554
1986	68,823	27,342
1987	73,641	29,956
1988	78,796	31,304
1989	84,312	33,495
1990	90,214	35,840

It is proposed to start a glass containers plant with a capacity of 20,000 tonnes per annum. The major raw materials like silica sand, soda ash, limestone felspar, sodium nitrate etc. are locally available in sufficient quantities and acceptable quality.

Investment in this project is estimated to be K.Shs. 110 million (US \$ 13.8 million) as shown below:-

	<u>Item</u>	<u>K.Shs.</u>
i)	Plant and Equipment including design engineering, erection, installation and training	80,000,000
ii)	Land and Buildings	12,000,000
iii)	Working capital	18,000,000
	Total Capital required	<u>110,000,000</u>

It is intended that the project will be implemented as a joint venture between a local development bank, local investors and foreign partners. The Industrial and Commercial Development Corporation will be the principal agency for organizing the local participation in the project.

3. CHEMICAL & ALLIED INDUSTRIES

This sub-sector covers the group of items such as basic industrial and agricultural chemicals, extracts of pyrethrum and wattle bark, fertilizers and pesticides, paints, varnishes and lacquers, pharmaceuticals, soaps and cosmetics, rubber and plastics. The projected annual growth rate of the sector during the current plan period (1979 - 1983) is 8.6 per cent. Within the manufacturing sector, the Chemical and Allied Industries are expected to make the second highest contribution to GDF, next only to food and beverages. The estimated investment during the Plan period are as follows:-

<u>Industrial Group and Projects</u>	<u>Total Investment</u> (KE '000)
1. Industrial Chemicals:	
(i) Caustic soda	8,000
(ii) Sulphuric acid and aluminium sulphate	400
(iii) Others: Hydrogen peroxide, sodium sulphate and zinc oxide	600
2. Manufacture of Fertilizer and pesticides	
(a) Fertilizer plant	15,000
(b) Small scale units for compounding fertilizers	500
(c) Basic pesticides compounding units	3,300
3. Pyrethrum extraction	1,100
4. Synthetic resins, plastic materials and man-made fibres	2,750
5. Paints, varnishes and lacquers	147
6. Drugs and medicines	350
7. Soaps, perfumes and other toilet preparations	2,500
	34,647

(i) Industrial Chemicals

The Projects being promoted in the industrial chemicals group include caustic soda, sulphuric acid and aluminium sulphate. Other projects under investigation are hydrogen peroxide, sodium sulphate and zinc oxide. The growth rate for this industry is expected to be 18.4 per cent per year.

(ii) Fertilizer and Pesticides

A project to manufacture fertilizers is under implementation during the current plan period (1979 - 1983). In addition to the manufacture of basic fertilizers, small scale units will be set up in consuming centres for compounding and granulating. A plant to produce technical material such as fenitrothion, dimethoate and diazinon which are used by pesticides formulation plants in Kenya is under active investigation.

(iii) Synthetic Resins, plastic materials and man-made fibres

Projects in this group include low density polythelene, polyvinyl chloride, cashew nut shell liquid, polyester resins, synthetic ropes and twines etc. The growth rate for this group is estimated to be 14.5 per cent per year.

(iv) Pharmaceuticals

Work is being done to identify indigenous plants that could be used for medicinal purposes. A study is also under way to establish the feasibility of undertaking the manufacture of basic drugs such as paracetamol, chloroquin phosphate, acetyl salicylic acid and calcium gluconate etc.

(v) Soaps, perfumes, cosmetics and toilet preparations
Small scale plants for manufacture of laundry soap and bath soap are being encouraged in the rural areas.

(vi) Manufacture of Rubber Products

It is proposed to establish a second tyre factory during the current plan period. A comprehensive sector study is being undertaken to identify investment opportunities for manufacture of rubber and rubber products, including possibilities of using reclaimed rubber for production of items such as transmission belts, conveyor belts and rubber hoses.

Other Chemicals

The projects under investigation include the following:

- (i) Dyestuffs
- (ii) Activated carbon
- (iii) Melamineware
- (iv) Fibreglass
- (v) Caffeine extraction
- (vi) Jojoba oil
- (vii) Commiphora Gums
- (viii) Essential oils

3.1 Caustic Soda (Sodium Hydroxide)

The use of caustic soda in Kenya is mainly confined to soap manufacture, vegetable oil refining and paper making. The present demand is estimated to be about 14,000 tonnes p.a. About 4,000 tonnes p.a. of caustic soda is produced by the pulp and papermill plant at Webuye mainly for their captive use. The rest of the demand is met through importation. The quantity imported in 1978 was 6800 tonnes valued at K.Shs. 9,382,000.

The growth rate in the demand for caustic soda based on the past trend, is about 10 per cent per annum. At this rate, the demand is expected to rise to about 20,000 tonnes by 1985. This justifies the establishment of facilities to manufacture caustic soda locally.

The Project: The caustic soda is proposed to be produced through the electrolytic (caustic chlorine) process. The salt for the process will come from the solar salt project which is already in the pipeline. The co-product chlorine will be utilized for the proposed project for the manufacture of PVC. The demand for chlorine, when the PVC plant comes up, will be about 15,000 tonnes per annum. No serious difficulties are likely to be encountered with regard to the availability of power.

Investment

The estimated capital requirement is K.Shs. 100 million broken down as follows:-

	<u>K.Shs. million</u>
Land and Buildings	15.0
Plant and Equipment	70.0
Working Capital	<u>15.0</u>
Total Investment	<u>100.0</u>

The project will be implemented as a joint venture involving a local Development Bank, local investors and an overseas partner. The Government is looking for technical collaboration and equity participation from the foreign partner.

3.2 Tyre Plant

Production of motor vehicle tyres in Kenya was started in 1969 and the plant which had an initial capacity of 153,000 tyres has recently been expanded to 314,000 tonnes. Local demand for replacement of tyres is also met by a number of tyre retreading plants with a combined capacity of 300,000 tyres per annum.

In spite of the existing tyre production facilities, Kenya still imports large quantities of tyres and tubes, which have been increasing at a rate of 7.5 per cent per year. It is estimated that by 1982 the tyre deficit will be about 300,000 units. This deficit is expected to rise to 485,000 units by 1985. This justifies the setting up of a second tyre plant in the country.

The proposed plant should have a capacity to produce a minimum 200,000 tyres and an equivalent number of tubes roughly broken down as follows:

Passenger tyres	100,000	mainly radials
Tractor tyres	20,000	
Light truck tyres	40,000	mainly crossply
Heavy duty tyres	40,000	
	<hr/>	
Total	200,000	
	<hr/>	

The project is estimated to cost K.Shs. 148 million (US \$ 18.5 million) broken down as below:

Land and Buildings	22,200,000
Machinery and Equipment	36,930,000
Services	12,370,000
Installation & Contingencies	44,500,000
Working capital	32,000,000
	<hr/>
	148,000,000
	<hr/>

The project would be implemented as a joint venture between local financial institutions, local investors and foreign investors.

3.3. Sodium Chloride

Production of salt in Kenya currently averages about 45,000 tonnes annually. With the implementation of the current marginal expansion of the existing capacity, salt production is expected to increase to 60,000 tonnes by the end of 1981 and by 1985 this is expected to reach 75,000 tonnes per year.

Most of the salt produced locally is used for human consumption. The only industrial use is for production of caustic soda. This industrial use is expected to rise by 35,000 to 40,000 tonnes by 1983/84 when the proposed PVC project is implemented. Total demand for salt is expected to be 110,000 tonnes by 1990. This justifies the establishment of another salt plant.

The proposed plant will be constructed on 1,200 hectares of land in the Coast Province and will have an initial capacity of 80,000 tonnes per year. The plant is estimated to cost K.Shs. 55 million (US \$ 6.9 million) as follows:-

	<u>K.Shs.</u>
Civil works (dykes, channels- building etc.)	40,000,000
Plant and machinery - pumps, tractors, harvesters, conveyors	12,000,000
Engineering and supervision	2,000,000
Working capital	<u>1,000,000</u>
	<u>55,000,000</u>

3.4 Polyvinyl Chloride

The present PVC requirements of the order of 14,000 tonnes, are being met through imports. The consumption by 1985 is estimated to be 20,000 tonnes. These figures justify the establishment of a plant to manufacture PVC resin in the country.

Initially the resin will be made from imported ethylene dichloride (EDC) and locally produced alcohol. Importation of EDC will be phased out once the proposed caustic soda-chlorine and industrial alcohol projects are fully implemented.

The total investment is estimated to be about K.Shs. 300 million (US \$ 40 million). The project will be implemented as a joint venture involving a local development bank, local investors and an overseas partner.

3.5 Basic Pesticides

Kenya does not manufacture any technical toxic pesticides. These requirements are met through imports of formulations either in bulk or small packets with the sole exception of certain insecticides which are imported as technical material.

Organo-phosphatic pesticides have been identified as economically feasible propositions for local manufacture. These are being used on various crops. The most popular ones are Fenitrothion, Dimethoate and Diazinon. The demand for these technical pesticides is

Fenitrothion	-	200 - 300 tonnes
Dimethoate	-	100 - 125 tonnes
Diazinon	-	100 tonnes

These compounds could be produced in a small multi-purpose plant using imported chemicals. The plant would have a captive formulation unit and release the extra material for other formulators in the market.

The estimated cost of the plant would be around K.Shs. 20 million.

3.6 Low Density Polyethylene

A market survey of the plastics industry carried out by I.S.P.C. in 1979 indicated that the demand for low density polyethylene is currently 7,000 tonnes per year and will increase to 13,000 tonnes by 1982 and 20,000 by 1985. Such a level of demand justifies the establishment of a plant to manufacture LDPE locally.

Two projects to produce power alcohol from molasses are currently being implemented in Western Kenya. Alcohol from these projects will be used for blending with petrol for use in motor vehicles. A proposal to set up a distillery to produce alcohol directly from renewable resources such as sugar cane, cassava, maize is under investigation. The proposed LDPE project will procure alcohol from this distillery.

It is envisaged that the investment requirement for this project would be of the order of K.Shs. 120 million (US \$ 15 million) broken down as under:

	<u>K.Shs. million</u>
Land and Buildings	18
Plant and Machinery	78
Working capital	<u>24</u>
Total	<u>120</u>

This capital includes the cost of alcohol production.

The project would be implemented as a joint venture between a local development bank, local investors and foreign partners. The foreign partners will be expected to participate through provision of the technical know-how, management, training of local staff and marketing of the product.

4. BASIC METAL AND CAPITAL GOODS INDUSTRIES

This subsector supplies machinery, equipment and maintenance spare parts which constitute the productive assets for all other industries as well as a wide range of non-productive goods for final consumption.

As a result of fast growth of import substitution and light engineering industries it has now become necessary to establish basic metal and capital goods for the creation of a self sustaining industrial sector. In order to achieve this goal, the establishment of iron and steel plant for the production of flats and billets, iron foundry to supply precision castings, press-shop for metal pressings and machine tool for machines is to be undertaken as a matter of priority. Investment envisaged in this subsector during the current development plan (1979-83) amount to K.Shs. 1,300 million.

4.1 Integrated Steel Plant

The International Centre for Industrial Studies under UNIDO, has forecast a demand for 2.016 million tonnes and 9.90 million tonnes of steel for the years 1985 and 2000 respectively in E.A. region, with Kenya consuming the largest proportion. At present, approximately 250,000 tonnes of steel is consumed annually in Kenya, of which over 225,000 tonnes are imported in raw form. The balance of the requirements is supplied from local electric smelting units which recycle the available domestic steel scrap. The provided demand for steel in the country by the year 1985 is 350,000 tonnes. In view of the future high demand for steel in Kenya and the neighbouring countries, and also taking into account the world trend for dispersal of the steel industry from the traditional steel centres to the consuming centres in the developing countries, a steel plant located in Kenya will have good prospects. The plant will have an annual capacity of 300,000 tonnes of steel. About 225,000 tonnes of the output will be in flat product and the remainder in steel billets. The steel production will be based on the direct reduction technology which has in recent years been established successfully in many different parts of the world. Mombasa has been selected for the plant site because of the port facilities necessary for importation of some of the inputs.

A prefeasibility study undertaken in 1978 by ISPC with technical assistance from the EEC, indicates that the proposed plant would be viable. The study drew tremendous interest from potential investors from many parts of the world.

Currently the ISPC with technical assistance from the Government of Austria is undertaking a detailed feasibility study which is expected to be completed by the end of 1980. The study is expected to recommend, among other things, the most appropriate technology to be adapted, suitable microlocation, infrastructural facilities, manpower, plant layout, process engineering and possible financing sources, sources of plant and equipment, sources of raw materials for the project.

The steel plant is expected to cost about K.Shs. 3 billion (US \$ 375 million) as shown below:

	<u>K.Shs. ('000)</u>
Plant and Equipment	1,870,000
Power plant	450,000
Land (developed)	40,000
Civil works	150,000
Auxiliary services	100,000
Civil works outside battery limits including township	<u>390,000</u>
Total capital	<u>3,000,000</u>

4.2 Precision Grey-Iron Castings

There are about six small foundries in Kenya, manufacturing simple castings like manhole covers and counter weight by using fairly simple methods and equipment. These foundries are not capable of manufacturing quality precision castings. The Kenya Railways workshop has a modern foundry but this is used for the production of castings for the railways.

Approximately, 9790 tonnes of iron castings were imported in 1977, mostly in the form of finished machinery and consumer items. With a 9% projected industrial growth rate in the country, the estimated demand for such castings is likely to be 15,500 tonnes by 1985. Assuming it will be feasible to manufacture locally 30% of the machinery and consumer items, there is a need for establishing a modern iron foundry plant. The proposed plant will have a capacity to produce 5,000 tonnes of castings per year. The product mix will include castings for the following:

- (i) Machine tools
- (ii) Valve and valve fittings
- (iii) Diesel engines
- (iv) Electric motors
- (v) Water pumps
- (vi) Agricultural machinery
- (vii) Automotive components
- (viii) Miscellaneous castings to be used for manufacture of spares for industrial machinery and intermediate products.

The plant will be equipped with facilities for the production of both floor and precision castings. The necessary quality control equipment will also be provided.

The envisaged capital cost is K.Shs. 53 million broken down as follows:

	<u>K.Shs. million</u>
Land and building (incl. services)	8.00
Plant and equipment	33.00
Working capital	<u>12.00</u>
Total	<u>53.00</u>

The employment potential is for about 330 people. It is intended that the project will be implemented as a joint venture between a local development bank, local investors and foreign partners.

Kenya Government is therefore seeking proposals from competent companies with the requisite expertise to design, manufacture, supply and instal the plant and equipment and also participate in ownership and management of the project.

4.3 Mopeds and motor scooter assembly plant

In Kenya the use of the bicycle has been limited to low income groups and regarded as a cheap mode of travel. But with the recent rapid changes in cost of living and attitudes of the people bicycle usage is becoming popular.

In the past the motor car has been a more comfortable and popular means of travel. However, with the recent increases in fossil oil prices it is becoming more and more difficult for the ordinary man to afford the more advanced mode of travel. It is therefore imperative that mopeds and motor scooter will assume great importance in Kenya.

Recent import statistics of mopeds, motor scooters and motor cycles are shown below:

<u>Year</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>
Numbers	1,252	1,332	1,674	2,136
Value K.Shs.('000)	3,986	5,361	7,329	9,470

Projected domestic demand for mopeds and scooters is as follows:-

<u>Year</u>	<u>1980</u>	<u>1983</u>	<u>1985</u>
Number	3,076	5,315	7,654

In view of the fore going it is proposed to establish a medium scale moped and scooter assembly plant in Kenya with an initial capacity to assemble 5,000 units per year. This plant is expected to cost K.Shs. 10 million.

The project will be implemented as a joint venture between local entrepreneurs, financial institution and a foreign partner to supply technical know-how.

4.4 Automobile Ancillary Industries

There are four motor vehicle assembly plants in Kenya with total annual capacity of 15,000 units of heavy and light commercial vehicles. Progressive local manufacture of automotive components is essential and the Government of Kenya encourages the manufacture of motor vehicle parts in order to increase the value of the locally assembled vehicles. Besides, importation of fully assembled passenger cars and commercial vehicles below 750 kg load and spare parts is increasing at an appreciable rate as shown in the table below:

Imports of Motor Vehicles

	1975	1976	1977	1978
Passenger motor cars	5368	6707	8360	10,680
Buses, trucks and lorries etc. complete	5912	5261	681	966
Chassis with engines	1760	1024	-	-

A few automobile ancillary parts manufacturing units have been established for the manufacture of batteries, tyres, radiators, rubber components, mufflers, filters, leaf-springs and a few fabricated items. Most of the motor vehicle parts are imported as part of the assembled or sub-assembled units or as spares in large quantities. In 1978 these were valued at K.Shs. 1604 million. The need for the development of automobile ancillary industries is considered most vital for fast growth of the automobile industry in the country and for proper maintenance of the vehicles on the road.

In view of the foregoing and in order to accelerate the rate of development of automobile industry in the country, it is proposed to encourage the establishment of a number of additional ancillary units for the manufacture of fast moving and simple components which require non-sophisticated technology and equipment.

A selected list of the items suggested for manufacture is as follows:

- door handles
- window fittings
- shock absorbers
- valves and valve guides
- spring washers
- circling clips
- shackles
- bushes
- kingpins
- brake drums
- oil and air cleaners
- radiators and
- transmission cables.

4.5 Precision Fasteners

Precision fasteners include nuts, bolts, rivets, screws, study washers and many other forms of specialised items used for joining metal parts together in industry.

There is an adequate capacity for local manufacture of nails, wood screws and commercial quality of nuts and bolts of limited sizes. However, approximately 1800 tonnes of precision ferrous and non-ferrous fasteners valued at over K.Shs. 260 million of different sizes and shapes are still being imported for use in automobile, electronic or other assembling units, as shown in the table below:

Imports of Nuts, Bolts and Washers

Q = Quantity in tonnes

V = Value in K.Shs ('000)

	1975		1976		1977		1978	
	Q	V	Q	V	Q	V	Q	V
Bolts, nuts & washers of black steel	61.2	371	93.6	1097	132.4	1424	397	3817
Other bolts, nuts and washers of iron & steel	647.1	9011	845.8	14023	1090.4	1352 2	17.944	2208
Bolts, nuts & washers	2.8	155	2.8	132	9.4	351	6.1	356
			942.2	15252	1232.2	19719	1765.3	26221

The importation of these specialised items has almost doubled within the two years (1976-78), due to the rapid growth of engineering industries in the country. The present demand for precision fasteners cover both ferrous and non-ferrous items, with or without some form of coating and heat treatment. The demand is likely to grow at a steady rate and is expected to exceed 3500 tonnes by 1983. Besides the local demand there is a potential export market to the neighbouring countries and therefore it is planned to establish a unit for manufacture of 2500 tonnes of precision fasteners, with total investment of K.Shs. 15.0 millions. The machinery for this plant includes multiple cold heading and forming machines, cold thread rolling, screw cutting machines, head slotting machines, heat-treating equipment, electroplating and surface finishing plant and a reasonable size of tool room for making the required tools and dies. In the initial stages product-mix will consist of items having big demand in the country with a possibility of mass production of both ferrous and non-ferrous fasteners of varied sizes.

14 March 1980

JEMK/vd

SOME SOURCES OF BASIC INFORMATION

1. Industry: Policies and Guidelines, Investment Opportunities etc.

The Permanent Secretary
Ministry of Industry
P.O. Box 30418
Nairobi

2. Industrial Finance Institutions (Parastatal)

The Managing Director
Industrial Development Bank (IDB)
P.O. Box 44036
Nairobi

The Executive Director
Industrial & Commercial Development Corporation (ICDC)
P.O. Box 45519
Nairobi

The Managing Director
Development Finance Company of Kenya (DFCK)
P.O. Box 30483
Nairobi

The General Manager
Kenya Industrial Estates
P.O. Box 18282
Nairobi

3. Economic Statistics

The Director,
Central Bureau of Statistics
Ministry of Economic Planning & Development
P.O. Box 30266
Nairobi

4. Trade and Commerce

The Permanent Secretary
Ministry of Commerce
P.O. Box 30430
Nairobi

The Executive Director
Kenya External Trade Authority
P.O. Box 43137
Nairobi

The Chairman
Kenya National Chamber of Commerce & Industry
P.O. Box 47024
Nairobi

5. Foreign Exchange Regulations

The Governor
Central Bank of Kenya
P.O. Box 60000
Nairobi.