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Industry Council for Development

Agro-Industrial Development in Somalia

RECOMMENDATIONS FOR ACHIEVING SELF-SUFFICIENCY
IN EDIBLE OILS

Report of an ICD Mission - April 1985

August 1985

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RECOMMENDATIONS FOR ACHIEVING SELF-SUFFICIENCY
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I. INTRODUCTION

At the request of the Government of the Democratic Republic of Somalia (GDRS) and USAID, the Industry Council for Development (ICD) was invited to make recommendations which would assist the Government in preparing an action plan for Somalia to achieve self-sufficiency in edible oil production over a period of 5-10 years.

The Council's initial recommendations were based upon a reconnaissance mission carried out in September 1984, a summary of which is attached at Appendix II. As a second phase ICD was asked to follow up with an Advisory Mission which took place in April 1985 involving senior industry edible oil experts from ICD member companies, Senior Associates and secretariat staff as shown below. The full terms of reference for the Advisory Mission are attached at Appendix I.

Mission Members

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The following report assesses the options for establishing a commercially viable integrated edible oils industry as the primary vehicle for achieving edible oils self-sufficiency. The establishment of such an industry will involve close co-operation between the public and private sectors and the collaboration of international organizations responsible for development and food aid.

Mission Conceptual Approach and Methodology

The mission utilized an agribusiness commodity systems approach as the basis for assessing the current edible oils system and for recommending changes necessary to achieve national self-sufficiency. The agribusiness system approach is a dynamic one which encompasses all individuals and institutions involved in the production, processing, storage, transportation and marketing of an agricultural commodity as it moves from farmer to consumer, as well as institutions which finance, regulate, support and coordinate that process. By describing the current agribusiness system for edible oils, the mission was able to identify the key constraints - both policy and operational - that must be resolved if a more dynamic overall system is to evolve.

In this regard, the mission has paid particular attention to the problems of agricultural research as a stimulant to increased raw material production; to technological and economic options for increasing processing capacity; and to the vital role which food aid can play in supporting rather than discouraging the growth of a viable integrated edible oils agro-industry.

The policy environment for this agro-industry has improved considerably in the past few years, particularly through incentives for farmers to increase their production of basic raw materials. However, a number of important unresolved policy issues remain, including the availability of credit and other financial support, particularly for processing and marketing functions.

The edible oils industry, like most other agro-industries, must function as a partnership between the public and private sectors. The government has dramatically reduced public sector involvement in this industry in the past few years and must continue this trend, particularly in the marketing function. However, government's partnership role must remain supportive of the industry through policy actions, financial assistance, and of particular importance, the coordination of food aid imports to support industry expansion.

Somalia has a long tradition of strong entrepreneurial activity. The mission was impressed with the private sector industrialists they met and their keen interest in the edible oils industry. Given the incentives and support necessary, the mission feels that Somali agro-industrialists can indeed meet the challenge, in partnership with their government, of edible oil self-sufficiency in the next 10 years.

Acknowledgments

ICD wishes to thank the USAID Mogadishu for the fine preparations and operational support they provided to the Council's mission in the field. Of particular importance was the SOMALCONSULT report on edible oils marketing which USAID commissioned specifically to provide fresh information on this subject.

The mission was particularly grateful to Louis Cohen and Loring Waggoner for their guidance and assistance in organizing the mission, and to Mohamed Ali Sherrieh for his skillful and untiring handling of the mission's itinerary.

II. SUMMARY OF MISSION RECOMMENDATIONS

Based on data provided by locally commissioned studies and government sources, the ICD mission estimates that national demand for edible oils will reach 65,000 tons by the year 1990. Assuming that local production and processing activities remain at 1984 levels, this would result in a deficit of nearly 50,000 tons, which would need to be replaced by commercial imports or food aid shipments of edible oils. This, then, is the gap which a strategy for national edible oils self-sufficiency must seek to fill.

The development of an integrated agribusiness system for edible oils to close that gap will require a concerted effort by the national government and international development agencies, as well as close coordination between the Somali public and private sectors. The following recommendations summarize the key elements of a strategy proposed by ICD for achieving national self-sufficiency in edible oils.

THE FRAMEWORK - A NATIONAL STRATEGY FOR SELF-SUFFICIENCY

A National Edible Oils Industry Task Force should be established to develop a strategy for national self-sufficiency and to guide and coordinate public and private sector action to implement the strategy. In so doing, the Task Force would consider the various options for developing integrated production, processing, and marketing activities outlined in this report. The Task Force should include prominent agro-industrial entrepreneurs and high-level representatives of the key ministries under the chairmanship of the Vice-Minister of Agriculture.

ICD would establish a counterpart expert advisory group, to provide direct advice and information to the Task Force and expertise for follow-up activities designed to implement the strategy. The present ICD mission members would comprise the core of ICD's group and other member companies would provide expertise as needed.

CREATING A STRONG VIABLE EDIBLE OILS INDUSTRY

Increasing Raw Material Production

- 1) Top priority should be given to increasing the yields and expanding the production of the traditional small farmer oil seed crops indigenous to the country, i.e. sesame, and by carrying out adaptive research on other commonly grown or recently introduced crops such as groundnuts, cotton, sunflower, and safflower which may be more suited to

mechanized cultivation on larger state and private farms. Longer term, there will be a need to investigate increased production from plantation crops by regenerating existing coconut plantations and examining the viability of palm oil production in the more humid areas in the South

- 2) A special oil seeds research program should be established which would be practically oriented towards the agronomic problems of oilseed production in Somalia, and directed at co-ordinating these needs with those of the commercial edible oils industry.
- 3) The program should be designed by a senior agronomist and a plant breeder, both expatriates, who would guide the activities of a number of Somali graduates. The expatriate scientists might be engaged on a contract basis to monitor the program through periodic visits to Somalia. Such an arrangement is often possible with universities and/or teaching institutions in developed countries.
- 4) The program should be semi-autonomous and its finances supplemented by proceeds from the sale of food aid edible oil. For administrative purposes it should be part of the new National Institute of Agriculture recommended by ISNAR. However, policy for the research program should be guided by the Edible Oils Industry Task Force.

Expanding Processing Capacity

- 1) The processing sector has a critical role to play in building an integrated edible oil industry. The mission believes that new processing capacity will stimulate increased raw material production, and that, while the expansion of small mills should be encouraged, the main increases in processing capacity should be carried out by larger mills capable of producing a significant volume of refined oil in or near the main areas of consumption. The ICD mission supports this option within the context of the production, marketing and other factors influencing the overall agribusiness system. The mission's processing experts believe that 100-200 tons of oilseed processing capacity per day represents the most cost-effective range for larger plants for conditions comparable to those in Somalia.
- 2) Technology options also include double-expeller mills and/or the more sophisticated solvent extraction method. All these options will need to be carefully examined by the National Edible Oils Task Force to determine the balance which will provide the optimum scale and type of operations appropriate to the financial, technical, and managerial resources of the private sector in Somalia.

- 3) Incentives for investment in new processing capacity should be part of the national strategy for self-sufficiency. Funds should therefore be made available to provide credit facilities for establishing new processing units, including adequate spare parts and supplies, to ensure their continual operation. Financing for small and medium scale operations should be explored through the U.S. Commodity Import Program (C.I.P) and other bilateral or multilateral development finance programs.

Using Food Aid to Stimulate Industry Growth

- 1) Food aid programs (US, European and UN) should be planned and managed to support the growth of the edible oil industry. In both policy and operational terms, the type and quantity of edible oil food aid must be geared to the evolutionary needs of the indigenous industry with, eventually, the termination of such aid imports.
- 2) To achieve this, the nature of edible oil products supplied as food aid should be changed from finished products to raw or intermediate products which can be processed or refined locally. This will alleviate any raw material shortage while the agricultural sector responds to new incentives and market opportunities offered by a growing industry. The public/private sector Task Force should have a role in coordinating food aid efforts to best support the edible oils industry.
- 3) Edible oil food aid products should be sold by auction to the private sector and the proceeds at the national level should be set aside specifically to support the development of the edible oil industry.

Developing a More Effective Marketing System

Changes in the marketing system for edible oils will be determined by the organization and evolution of the production and processing sectors. Rural marketing systems, which are presently diffuse and decentralized, should evolve into more centralized, systematic patterns of collection and transport from the farm and village to processing centers and larger urban areas. Other changes which should evolve from the growth of a national edible oils industry should include:

- 1) While the expected expansion of small expeller operations will continue to satisfy much of the demand for crude oils, new processing capacity for refined oil products should be located as close as economically feasible to the main areas of consumption, i.e. the larger urban markets. New or expanded distribution systems will have to be developed to deliver refined products to the North and rural areas throughout the country.

- 2) A major objective should be a greater integration and streamlining of the national marketing system with a reduction in the number of intermediaries between producer and consumer. There should be two main channels of distribution:
 - a) For free market trade through the private sector, the channel should be from the manufacturer through the distributor/agent, to the wholesaler/retailer to the consumer.
 - b) For distribution by the public sector, the channel should be from the importer or manufacturer through public institutions and outlets to the consumer. To maintain uniform retail prices the manufacturer should absorb all transportation and other costs prior to delivery.
- 3) There should be greater standardization of products and greater uniformity of prices in different regions of the country. Prices should reflect the costs of production plus a fair return to all involved.
- 4) Crude or virgin oil which commands a higher price should be clearly identifiable from refined or cooking oil through new packaging techniques aimed at reducing adulterations and standardizing container sizes.
- 5) Price stabilization, without government intervention, will be a major objective of the new integrated industry. This must be achieved through a pricing structure that provides incentive for the producer and processor, fair margins for the distributors, and resulting in a retail consumer price that deters smuggling of oils either into or out of the country.
- 6) Market systems stability can also be strengthened through promotional efforts that build quality consciousness and brand loyalty. As free market forces increasingly influence the entire agribusiness system, inefficient operators will have to improve their performance or drop out.

III. THE NATIONAL EDIBLE OILS SYSTEM IN SOMALIA

Edible Oils as an Agribusiness System

The changes in national economic policy enacted by the Government of the Somali Democratic Republic in the early 1980's had far reaching implications for the structure and operation of the edible oils agribusiness system. The liberalization of pricing and marketing regulations and decentralization of

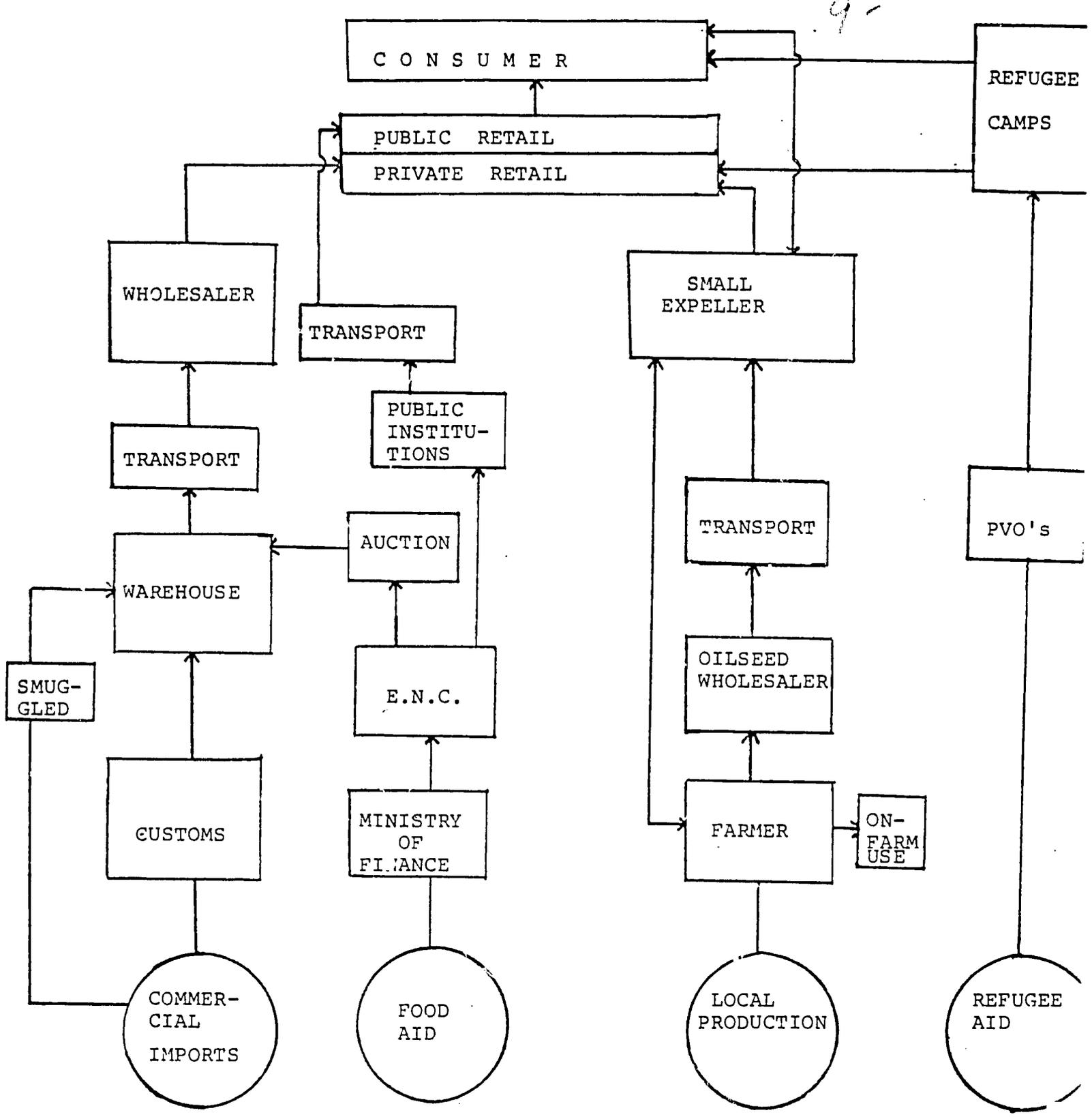
functions which was taking place throughout the agricultural and industrial sectors involves the agribusiness system. Both sectors were to have a profound effect on the way raw materials and processed edible oils were to move from farmer to processor, and ultimately to the consumer.

The role of two key state agencies, the Agricultural Development Corporation (ADC), which had a monopoly on the purchase and distribution of agricultural produce in domestic markets, and the Ente Nazionale di Commercio (ENC), which had a monopoly on the import and distribution of imported consumer goods, were substantially reduced. These roles were to be played increasingly by the private sector. Similarly, restrictions on private sector activity in manufacturing and processing activities were eliminated, and entrepreneurs were encouraged to invest their capital in the local economy.

These measures have begun to bring results. Agricultural production has increased notably over the last few years, and entrepreneurial confidence in the local business climate has improved considerably. However, shortages of raw material and processed oils, wide, frequent price fluctuations and regional price disparities, and under-developed marketing systems characterize the present operation of the agribusiness system for edible oils. The growth and refinement of commercial operations in all the activities that comprise that system will require close coordination between the public and private sectors, and the assurance of continuity in policies and programs that promote private sector growth and confidence. Despite the positive results of changes in the policy environment, there persists a distrust of government by the private sector, particularly regarding any large scale private operation.

Currently the edible oils agribusiness system in Somalia is a loosely connected series of efforts dominated, on the one hand, by food aid sold and distributed by the public sector and commercial imports, and on the other, by small-scale private production and processing, primarily of sesame crude oil. Refugee aid oil diverted into commercial channels, and smuggled edible oils, also represent a significant portion of consumption in many parts of the country. The diagram on the following page illustrates the flow of edible oils from different origins through the system to the consumer.

Individual Somali consumers of edible oils obtains their product through one of two primary sources: private retailers (open markets, shopkeepers, small mills, etc.), or the public, subsidized retail system operated by the government for civil servants, the military, and other public sector employees.



FLOW CHART OF THE EXISTING EDIBLE OILS
SYSTEM IN SOMALIA

The flow of edible oils into the private retail system takes place through four channels:

Commercial imports: Following the enactment of market liberalization policies by the government in 1981, private traders have played a growing role in the legal importation of refined edible oils into Somalia. Such traders (often wholesalers or a group of retailers in a joint venture) provide their own foreign exchange, and place their orders directly with their foreign supplier. Once the product arrives at the customs warehouse (generally packaged in cans), the importer either sells the product immediately, prior to customs clearance, to interested buyers (generally realizing a 15 to 20% return on investment), or assumes the financial costs of customs fees, duties, etc. and handles warehousing, transport, and marketing of the product. The minimum quantity of edible oil sold by importers and wholesalers to retailers (grocers and open market vendors) is reported to be one carton containing 4 to 6 cans of oil (approximately 20 liters). Strategies followed by importers are strongly affected by the unstable supply situation in the local market, which alternates between sudden shortages, and market gluts, which sometimes coincide with the arrival of food aid shipments and the sale of oils by the public sector.

Smuggled oils also play a significant role in the local market, but their precise impact cannot be accurately determined. Hoarding of oils and speculation by traders is reportedly endemic, and prices can fluctuate sharply in the open market. The ICL mission was informed by one source that margins received by dealers from the sale of edible oils are in the order of 100%. Prices for oils in urban markets are also reportedly twice as high as those in rural markets.

Food aid (US PL 480 WFC, EEC, etc.): Prior to 1984 food aid oils were handled by ENC, which distributed them through public retail channels, or sold them to the private sector at a fixed price to stabilize prices. In 1984 food aid shipments of edible oils were distributed entirely through the public sector retail system. Plans to auction a portion of food aid oil to the private sector for resale through commercial channels were not carried out in 1984. The mission was informed, however, that plans exist to auction approximately 40% of edible oil food aid shipments to the private sector in 1985. In this case, the edible oils, which would be received by the Ministry of Finance, would be transferred to ENC, and auctioned to interested buyers. The auction price would start at the floor price, which would include all previous costs, including CIF cost, customs duties and other taxes, and a 2% handling charge to ENC.

Refugee aid: Although destined for the refugee-camp populations, a sizeable proportion of these edible oils are diverted into commercial channels. There are no accurate figures for the volume of oils so diverted. As these vary widely depending on market shortages, some sources placed the percentage of diverted oil as high as 25% of the total. One indication of the impact of diverted refugee oils on the commercial market is the fact that, as reported to the ICD mission by one source, the most stable prices for edible oils are found invariably in those regions of the country near to the refugee populations.

Local production: Local production of edible oils is at present entirely in the hands of small expeller mill operators (either camel-driven or motorized) located throughout the country. The oil produced by these millers is primarily crude sesame oil, which is used as salad oil or eaten mixed with food (as opposed to cooking uses). Most of the sesame seed processed by these expellers is produced by small farmers who keep a portion of their crop for their own use (which is processed for them for a fee by small millers), and sell the balance to local wholesalers or directly to small millers.

In urban areas millers obtain sesame seed from local markets, or from wholesalers that purchase seed from farmers in neighboring agricultural regions. Urban millers generally sell their product to consumers in their immediate vicinity, either through open market vendors (generally women who display the oil in clear bottles and sell it in small quantities for consumers' daily requirements), or shopkeepers, neighboring customers, restaurants, etc. The oil is poured into containers of varying sizes which are generally furnished by the customer.

Custom crushing (crushing sesame seed for customers for a fee) is also widely practiced by both rural and urban mills. The fee (in both urban and rural mills) could be either a cash payment, or alternatively oil cake and/or a portion of the oil extracted.

Oilseed cake is also sold locally or to wholesalers for use as animal feed. Prices for cake obtained vary widely and have been reported to equal the price of oil at certain times. However, no developed commercial systems exist nationally for the sale of oilseed cake.

The Somconsult report estimated that there are about 190 small motorized mills throughout the country. Approximately 110 of these are located in the Mogadishu area; the rest are dispersed in the main oilseed-growing regions. They operate, depending on the availability of spare parts, energy, and raw material, approximately 250 days per year, for 12 hours per day on average. Processing capacity per day ranges from 1/2 to 1 ton of oilseed. Capacity utilization is strongly affected by frequent machine breakdowns, the lack of spare parts, and seasonal and inadequate raw material supply.

The flow of edible oils into the public retail system takes place through the following channel:

Food Aid/ENC: As mentioned above, prior to the changes in economic policy in 1981 the ENC was responsible for the import and distribution of all imported consumer goods. These activities were not open to the private sector. As the economic changes began to be instituted, the private sector was permitted to import foodstuffs. The responsibility of ENC was narrowed to the import of goods for public institutions, i.e. the military, the civil service, schools, hospitals, and other public institutions. Edible oils imported under food aid programs today still fall under the responsibility of ENC. Under the previous system, the ENC had established a distribution network through which consumer goods flowed: from 13 regional centers, to district centers, (and, where appropriate, to village centers), to licensed retailers. Prices for commodities, which factored in an average cost for transport and distribution, were set by the ENC headquarters, and were uniform throughout the country, including remote areas. Prices were set at three levels: ENC sale price to the district center; the district center price to the retailer; and the licensed retailer price to the consumer.

Under the present system, the ENC distribution network applies only to public institutions. At the consumer level, government employees can purchase foodstuffs from government stores at subsidized prices. For example, 1 kilogram of edible oil at a government store is sold at 54 Shillings. The average price in the free market is 120 shillings per kilogram. (Prices as of April 1985).

The edible oil sold in government stores is obtained from food aid shipments; crude sesame oil is available through the private retail trade.

The Market for Edible Oils in Somalia

Local consumption in Somalia includes both crude and refined oils. Crude oil is primarily obtained from local processing of sesame seed. Refined oils are obtained entirely from imports, both commercial imports and food aid shipments. Consumer preference in Somalia clearly favors crude sesame oil over imported refined oil, and the former commands a higher price in local markets. Although the crude sesame oil produced locally might be considered inferior by modern food standards to imported refined oils, (it contains more impurities and off-flavors due to the level and method of extraction), Somali consumers prefer its taste and aroma to those of the imported refined oils. Crude sesame is generally consumed as salad oil or mixed in foods to be eaten directly. Refined oils are most often used for cooking, although substitution of refined for

crude oils does take place depending on the availability and price of crude oil in the market.

USAID Mogadishu commissioned Somconsult to prepare a study of the Somali edible oils market to provide updated and more detailed information than previously available in the Patterson, Noor study. Based on the Somconsult report, as well as from government sources, the ICD mission estimates that approximately two thirds of the market was supplied by imported oils in 1984. The following table provides a breakdown of current and projected market figures:

TABLE I

	<u>1984</u>	<u>1990</u>
Total edible oil consumption:	45,000 tons	65,000 tons
Local production:	<u>16,600</u> tons	<u>16,600</u> tons
Deficit:	28,400 tons	48,400 tons
Food aid imports:	17,400 tons	
Commercial imports:	<u>11,000</u> tons	
Total imports:	28,400 tons	

Table I presents an estimate of total demand for edible oils in Somalia of 65,000 tons by 1990. This estimate is based on the present rates of population and market growth in Somalia, which can be expected to apply over the next five years. It also assumes that local production of oilseeds and edible oils will remain constant over that period. If these assumptions are correct, it can be anticipated that a national deficit of nearly 50,000 tons of edible oils will exist in 1990. Unless a local industry can be developed to fill this gap, Somalia's dependence on imported and donated edible oil shipments will almost double by the end of the decade.

A strategy of edible oils self-sufficiency must seek to overcome this gap. The ICD mission members believe that national self-sufficiency is technically possible and should be economically feasible. The framework for a strategy of

self-sufficiency was outlined in the ICD Reconnaissance Mission Report of September 1984. It called for a concerted effort by the private and public sectors, and included suggestions for measures to increase production which have since been approved in principle by the Government.

The present ICD mission feels that, in addition to the need to coordinate the efforts of the public and private sectors, a third factor, critical to the development of a viable edible oil industry in Somalia, will be the cooperation of the international development community in providing financial and technical support, and in adjusting food aid policies and activities so that these become a stimulus, rather than a disincentive, to local edible oils production.

AGRICULTURAL PRODUCTION OPTIONS

The effective operation of Somalia's edible oils industry is intimately linked to the existence of a reliable and adequate local supply of oilseeds, which are the industry's raw materials. Although it is theoretically possible for such an industry to rely on imported or donated oilseeds for its raw material requirements, such a situation does not lead to long term security; nor does it provide the economic opportunities and income generation that a well integrated agribusiness system, with its many linkages between the agricultural and industrial sectors, could provide for farmers and entrepreneurs involved in the production, storage, transport, and sale of local oilseed crops.

One of the major constraints to the expansion of the Somali edible oil industry has been a chronic shortage of raw materials for the processing sector. Small mills reportedly sit idle during periods of oilseed shortages. A frequently cited contributing factor to the problems faced by the government oil mill in Mogadishu was its inability to obtain reliable supplies of raw material. It is important to note that such shortages have been primarily the result of the previous government producer price policy which set prices at a level too low to stimulate sesame or other oil seed production. The government also tried to monopolize oil seed purchasing through the ADC. Neither tactic was successful; farmers refused to increase production and/or sold oil seeds in the black market.

Increased productivity in oilseed production is, of course, tied to overall improvements in the agricultural sector. The September 1984 ICD Reconnaissance Mission Report described the situation in the agricultural sector, as well as the main constraints (i.e. water management, research, input and credit availability, pricing, and marketing) to increasing agricultural production. The Reconnaissance Mission also noted and described the positive measures the Somali Government has enacted under

its economic liberalization program, and its 1984 Agricultural Development Plan, to stimulate the growth of the agricultural sector. These measures are summarized in the agricultural section on the Reconnaissance Mission Report, which is attached for reference as Annex III.

As a result of the new agricultural policies, agricultural production grew substantially in the early 1980's over the previous decade. The ICD mission was also informed that, in response to new incentives, farmers that had left the land are now returning to farming, and the agricultural population has increased.

The ICD mission also noted the Government strategy to settle tenant farmers (with 50-year leases) on small irrigated plots of land on what were previously state farms. Farm families are provided an average of 1 to 2 hectares of land (up to 5 hectares in the Juba region), are given credit at 5% interest for inputs, access to machinery and equipment formerly belonging to the state farms, and basic extension services. Where this scheme was tested, farmer yields increased 350% over previous yields according to the Ministry of Agriculture. The mission was also informed by the Ministry that government intends to settle an average of 2000 farm families on former state farm property per year under this program until all state farm land is occupied in this way. Further unused lands would then be made available for settlement after that time.

The ICD mission believes that the incentives for farmers, incorporated in the new economic policies, and such programs as the tenant farmer settlement program, provide important stimulants for breaking the bottleneck of the supply of raw materials for the edible oils industry. With the ability of processors to provide new market outlets and offer remunerative prices for oilseeds, farmers, given the necessary resources, will be willing to increase oilseed production. This was stated emphatically to the ICD mission by the leaders of a farmer cooperative near Afgoi, who expressed their willingness to increase oilseed production beyond present levels under contract if new processing capacity was established in the vicinity.

The bulk of the total tonnage of oilseed produced in Somalia is sesame, reaching approximately 40,000 tons in 1984. As mentioned earlier, oil from sesame seed is the oil most preferred by Somali consumers for salad and eating. The other two main oilseed crops are groundnuts (3,300 tons produced in 1984), and cottonseed (2,700 tons produced in 1984). Coconuts, another potential oil crop are grown mainly in the Lower Shabelle and Juba regions. However, coconuts are normally consumed green, and the oil processed is generally intended for cosmetic purposes.

Other potential oilcrops that have been tested on a limited basis in Somalia include sunflower (tested on large farms and at resettlement projects, they suffered heavily from bird damage), and safflower (has not lent itself well to manual harvesting, due to spines - although a spineless variety is reportedly available). Soyabean is not particularly suited to Somalia's climatic conditions. Rape and mustard seed and oil palm while potential oil crops, have not been grown as such in Somalia.

The needs of an expanding processing industry and the requirement to dramatically increase local production of oilseeds in as short a period as possible if self-sufficiency is to be attained require a concerted government strategy for oilseed production that should be closely coordinated with the ongoing agricultural development strategy. Efforts should be made to increase the total hectarage cultivated with oilseeds. However, strong efforts should also be made to increase yield per hectare, through improved cultural practices, research into higher yielding varieties and the cultivation of alternative oilseed crops.

The ICD mission recommends that initial government efforts be primarily directed towards the development of indigenous sesame. However, it is highly unlikely if not undesirable that major increases in oilseed and edible oil production could or should be based on sesame alone as it would be unwise to rely on a monoculture. The need for substantial yield increases per hectare, and the quantitative requirements of the edible oil market (particularly the need to produce large amounts of refined oils) will require the development of other oil crops.

Therefore, the second part of this strategy should be to increase the production of other commonly grown oil crops, notably groundnuts, cotton, and coconuts. Groundnuts and cotton were at one time widely grown in Somalia, and are thus familiar crops to farmers. The viability of cotton, of course, will be linked to developments in the textile industry, which has declined substantially over the last decade. However, the ICD mission was informed that efforts will be made to revitalize the industry, which should improve the prospects for cottonseed as an oil crop. While coconuts are primarily treated as a minor crop, they may have a good potential for expansion over the long term with improved cultural practices.

An important factor in the decision to expand the production of other oil crops in addition to sesame is the higher yield that can be obtained per hectare from other crops. The following table gives a comparative listing for the oil crops discussed in this report:

TABLE II

Comparison of average oil crop yields in Somalia

SESAME:	3 Quintals per hectare
GROUNDNUT:	7 Quintals per hectare
COTTON:	7 Quintals per hectare
COCONUT:	N/A
SUNFLOWER:	6-7 Quintals per hectare
SAFFLOWER:	5 Quintals per hectare
SOYABEANS:	N/A

Source: Ministry of Agriculture

A national oil crops research program

The ICD mission strongly recommends that an agricultural research program geared specifically to oil crops and the needs of the edible oils industry be established. The program should be "user oriented" - practically oriented toward the agronomic problems of oil crop production in Somalia, and to the specific problems of Somali farmers operating under both dryland and irrigated conditions. It should also be oriented toward the needs of the edible oils market and the processing industry, coordinating its research activities with the private sector.

While it was suggested to the mission that a special research station for oil crop research might be established to carry out this program, the ICD mission does not believe that the expense of creating an entirely new station is warranted. Also the time required to set up such a station, as well as arranging for its administrative and infrastructural needs, would obviously delay the start-up of program activities, and thus delay the communication of useful information to farmers.

The ICD mission therefore recommends that, while a separate, semi-autonomous research program be designed to cover the needs of oil crop development, the actual work in the field and laboratory should be carried out as part of the new National Institute for Agriculture, which was recommended by ISNAR, the International Service for National Agricultural Research.

According to the ISNAR recommendations, this institute would be under the control of the National Council for Agricultural and Livestock Research. The Council would be charged with integrating the work of all research institutes in Somalia into a national research system, while leaving the day-to-day responsibilities for the management of individual projects with the particular groups concerned. The National Institute for Agriculture would operate as a nonprofit, autonomous body under the guidance of the Council. It would receive its budget allocation from the Ministry of Finance, but would have the authority to receive grants from other sources.

It is therefore recommended by the ICD mission that the proposed oil crops research program be linked to the National Institute for Agriculture, with access to its administrative, research, and structural facilities. The oil crops research program should have its own budget, financed from the proceeds of food aid sales, government grants, and financial support from international development organizations. Eventually the local private sector could consider providing financial support to the program for research, perhaps on a contract basis, related to industry needs and problems.

Research Staff

It is suggested that two highly qualified expatriate scientists, one a senior agronomist, the other a plant breeder, be assigned to develop new high yielding varieties of oil seed crops, appropriate to Somali conditions. These researchers would, in the first place, design a program of work and guide the research activities of four or more Somali graduates, who would be responsible for the day to day operations..

In the words of ISNAR, "resident foreign scientists are very expensive," and it may also be difficult to attract scientists of the caliber necessary to achieve the objectives of the program in the limited time suggested. It may, therefore, be worth considering employing top quality scientists on a consultative basis, ie. scientists who would be prepared to set up the program and there-after to visit Somalia, periodically during the year (possibly two or three times) to monitor the progress of the work.

This type of "contract research" often lends itself to co-operative ventures with universities and teaching institutions where the staff are available to carry out work abroad during vacations. The Institute of Agricultural Botany at Cambridge University, UK is a very good example of this, there are probably a number of universities in the USA which would also do so. Close association with teaching institutes often ensures the most up-to-date technical information available for research studies.

It is worth noting, however, that ISNAR has suggested the development of a residential community for scientists in the Afgoi area. This, in ISNAR's opinion, will help to weld the researchers into a cohesive unit and would obviously also be of great benefit to visiting scientists, who would be made to feel part of the team although they may not always be in residence.

Focal points for the oil crops research program

The main activities of the oil crops research program should include adaptive research and trials for higher yielding varieties of all major oil crops, including optimum requirements for cultivation, fertilizers, pesticides, and water use. The results of the program would be transmitted rapidly and regularly through extension services and other means of communication with farmers.

Regarding specific oil crops, the research program could address:

Sesame: Research into higher-yielding, nonshattering varieties, as well as greater drought resistance. There is very little research being carried out in other parts of the world on this crop, particularly for climatic conditions of the type prevailing in Somalia. In this sense, the research program could become an international enter of excellence for research on sesame.

Groundnuts: Research on disease resistance, and on higher oil yielding varieties must be continued as groundnuts are becoming a popular cash crop in rainfed areas. However, groundnuts must also be considered a dual purpose crop. The bulk of the crop should be used for oil production; but hand-picked, selected kernels can also be marketed for confectionery purposes at high prices. (In some countries 50% of the crop goes to the confectionery market.)

Cotton: Research into new varieties which may be considered primarily for oil production, and secondarily for lint.

Sunflower: Research on varieties suited to Somali conditions, particularly varieties that are less prone to bird damage. Alternatively, the program could explore new methods for bird control.

Safflower: Research on non-prickly varieties which might be suited to hand-harvesting.

Oil palm: In the long-term there may be a need for research into plantation crops for more humid conditions, particularly if the Badera Dam allows full development of the Juba river valley.

Coconut: Research into the regeneration of existing plantations with high-yielding varieties and improved cultural practices, and their extension into larger and more viable units. This crop could become a source of raw materials for an oil processing plant and refinery at Kismayo.

Mustard/
Rape seed: Research on varieties suited to the tropics, particularly the dry tropical conditions prevailing in Somalia.

Equsi melon
(colocynthis
citrullus): This crop is used for oil in parts of West Africa. It may be adaptable to local farming systems, as it is well suited to semi-arid conditions, and produces a very high quality oil.

V. PROCESSING OPTIONS

A most critical role in the growth of Somalia's edible oils industry will be played by the processing sector. The development of the other components of Somalia's agribusiness system for edible oils will be intimately linked to the dynamism and efficiency of new processing enterprises. In this sense the processing sector will act as the 'engine of growth' for the rest of the industry. Agricultural production will be able to expand only as the processing sector generates new demand and provides remunerative prices for oilseeds.

Commercial imports and food aid shipments will be replaced only as local processing capacity expands to satisfy the national demand for edible oils. Prices for oils will stabilize and become more uniform throughout the country only as the processing sector increases output and develops marketing arrangements relevant to the logistical and qualitative requirements of the market.

The ICD report uses the following processing terms and definitions:

Crushing. Recovering oil from oilseeds through the expelling method (using screw presses), and/or solvent extraction (a chemical process). In this way three products are obtained:

1) Crude oil, ("virgin" oil) recovered through expelling without further processing. This oil is regarded as the best quality salad and eating oil, and is consumed as such in Somalia, mainly from sesame.

2) Solvent oil, another crude oil that must be refined.

3) Oilseed cake, the by-product obtained through the expelling method, or oilseed meal, the by-product obtained through the solvent extraction method; the latter will have a significantly lower remaining percentage of oil than oilseed cake.

Refining: Processing steps taken following the crushing stage, which consist of de-acidification, bleaching (to eliminate color), and deodorization, (to eliminate off-flavors). The finished oil is a bland product of a good yellow color.

The previous chapter described the breakdown of current consumption of edible oils, differentiating between oils produced locally and imported oils (food aid as well as commercial imports). This breakdown also reflects the segmentation between crude oils and refined oils, since imported oils are mainly refined oils.

The mission's projection for 1990, based on figures in the Somconsult report and other sources, assumes that the vast majority of the projected gap of 50,000 tons would, in the absence of increased local processing, be filled by imports and food aid shipments of refined oils. While crude oil demand can be expected to increase from present levels, and should be met by increased local processing, the larger and more difficult task of a strategy for self-sufficiency will be to expand processing capacity to replace imported and donated edible oil shipments. The options presented below are examined in light of this critical need.

The Government of Somalia, USAID, and the National Edible Oils Task Force will need to weigh carefully the available processing options for reaching self sufficiency, particularly in light of Somalia's technical, managerial, financial, and infrastructural

constraints. In its meetings with public and private sector representatives the ICD mission heard a variety of opinions on technology options, scale of operations, and so on. The mission noted that a number of entrepreneurs are moving ahead with plans to set up processing operations in the order of 11 to 50 tons of oilseed processing capacity per day. Other entrepreneurs are considering importing small-scale expellers from Taiwan, Japan, and India for resale to small-scale operators. Most entrepreneurs expressed doubts about the viability of centralizing all processing operations in a large-scale mill as is generally done in more industrialized countries. This report therefore examines two options for expanding processing capacity, which were frequently put forth by individuals in the private and public sectors. These options, from the point of view of the ICD mission members, appeared the most feasible given conditions prevailing in Somalia, and would be consistent with recommendations offered in other sections of this report:

1) Encourage the growth of small scale expeller plants in rural and urban areas, relying exclusively on such operators to increase national processing capacity but accepting the limitations of such an approach in terms of volume of seeds and lack of refining capabilities. This could include the import of expelling equipment and spare parts, as well as credit, training, and technical assistance, for small-scale entrepreneurs.

2) Encourage local entrepreneurs to install larger processing plants, which would be capable of both crushing and refining operations, and would be located near the main centers of consumption. This could be done in concert with efforts to promote the development of small processors, particularly in rural areas. The edible oils industry would thus be composed of small operators dispersed throughout the country and producing crude oil, and larger processing plants, producing crude and refined oil, geared largely to urban and high-consumption markets.

Option 2), which combines the key elements of the first option, but addresses the need for a rapid expansion of processing capacity to replace the large volume of imported refined oils, is the option recommended by the ICD mission. As noted above, entrepreneurs have already begun taking steps in that direction, and are considering the establishment of plants with an oilseed processing capacity of 11 to 50 tons per day. While such plants would represent an increase in cost effectiveness over processing technology currently being utilized, the ICD mission's processing experts are of the opinion that a more cost-effective plant size would be of 100 to 200 tons oilseed processing capacity per day.

The mission's conclusions are based on the following considerations:

Small scale expellers operated by individual entrepreneurs do possess a number of advantages given the present state of the industry and economy in Somalia. The processing technology is well known, and has been effectively utilized by small-scale entrepreneurs for several years. Such operations are also labor intensive relative to large operations, and often represent a source of income to entire families. They also obviously represent a highly decentralized system of production: breakdowns or production shut-downs by individual expellers, due to energy shortages, raw material shortages, technical problems, etc. (all quite common in Somalia) would not have the negative impact on aggregate production that such events in a larger, more centralized mill would have. Under a small-scale decentralized processing scheme the logistical problems presented by procurement and marketing in a large, centralized operation in Somalia would not apply. Small-scale expellers tend to be close to their sources of raw material as well as to their markets.

However, exclusive reliance on small-scale expellers would not provide a realistic opportunity to close the deficit in edible oils that is anticipated for the year 1990. Such an increase in processing capacity would require a dramatic increase in the number of expellers over their current number. As Table II shows, meeting total national demand for edible oils in 1984 through small expellers alone would require that their number be increased from the present 190 to 535, an increase of 345 mills. If the projected demand for 1990 is to be met, the total number of fully operational mills will need to be increased to 773, a total increase of 583 mills. Attaining such a target over a five or even ten-year period would appear highly unlikely. The costs in foreign exchange of such an approach, relative to increasing processing and refining capacity through larger mills, should be carefully considered.

TABLE III

Number and total cost of small expellers required to replace imported edible oils*

	<u>1984</u>	<u>1990</u>
Present number of expellers:	190	190**
Present production of oil:	16,000 tons	16,000 tons**
National demand for oil:	45,000 tons	65,000 tons
Oil deficit:	29,000 tons	49,000 tons
Additional no. of mills required:	345	583
Cost of Taiwanese mills***:	\$11,700	\$11,700
Total cost in U.S. Dollars:	\$4,036,500	\$6,321,100

*Assumes average output of small mills to be 84 tons of oil per annum (336kg./day at 250 days per annum).

**Assumes local production of oil and number of expellers remain constant through 1990.

***Taiwanese mills chosen for illustrative purposes. Prices for small expellers given to the ICD mission ranged between \$4,000 and \$30,000.

In addition to sesame, these small expellers can crush groundnut and coconut meats, but are less efficient on sunflower and safflower. Cotton and soyabeans are nearly impossible to process with reasonable yields using such expellers (soyabeans in particular require solvent extraction). Furthermore, oil from the latter 5 oilseeds is often unpallatable in its crude state, and requires refining. As already mentioned, the small expellers do not have a refining capability.

Options for establishing larger processing plants

The choice of processing capacities and technologies will ultimately be made by the entrepreneurs that invest in the industry. However, since no medium or large scale processing operations exist at present in Somalia (with the exception of the public sector mill in Mogadishu which is no longer operational), and local familiarity with the implications of different processing options can be assumed to be limited, this section will examine the relative merits of processing options, and their implications for an edible oils self-sufficiency strategy. For the purpose of demonstration, options will be examined for an oilseed crushing plant with a capacity of 100 to 150 tons oilseed processing capacity per day.

There are two key options:

- 1) Install an expeller plant, comprised of a low-pressure expeller followed by high-pressure worm screws.
- 2) Install a low-pressure expeller plant followed by a solvent extraction plant.

Option 1): The advantage of this option is simplicity and safety relative to a plant equipped with solvent extraction. It is also less expensive to install. However, it is a heavy duty plant, which may be more prone to break-downs, even with good maintenance. It also consumes greater quantities of electricity and steam. Thus, while its installation costs might be lower than those for option 2), its operating costs will be higher.

In addition, the oil yields for a double expeller mill will be lower than for a solvent extraction plant. This is particularly the case for oilseeds with a lower oil content (e.g. cotton and undecorticated sunflower). Soyabeans cannot be processed with any reasonable results in such a mill. Thus, the more limited range of oilseeds which can be effectively processed, coupled with higher operating costs and lower yields of oil, are factors to be weighed against the relative simplicity and lower investment cost of such a plant.

Option 2): The advantage of a plant equipped with solvent extraction is its greater versatility (in terms of the range of oilseeds it can process) and its higher oil yield. A plant equipped with solvent extraction can process soyabeans, and it can process the other oilseeds mentioned in this report more efficiently than a double expeller mill. As a general rule it can be expected that, after double expelling (low pressure followed by high pressure--option 1)) oilseed cake retains an average oil content of 6%. After low-pressure expelling followed by solvent extraction (option 2)) oilseed meal retains an average oil content of 0.7%.

A solvent extraction-equipped plant will require a greater investment of capital for its installation, but its operating costs and electricity requirements will be lower relative to those of a double expeller mill. This, combined with its greater oil yield, would result in a more cost-effective operation than option 1). Labor requirements for a solvent extraction-equipped plant do not differ substantially from those of a double expeller mill.

One potential drawback to a solvent extraction-equipped plant is its greater technical complexity. It also uses a highly flammable solvent, which presents a fire hazard. This fire hazard is compounded in a situation of unreliable electrical power. Interruptions of power are dangerous, since coolers must operate continuously. These problems are not insurmountable if careful safeguards are maintained. In this kind of plant a reserve supply of water should be available under pressure for emergencies; a water tower is necessary. A generator for electricity in case of power failures would also be necessary. Both water reserves and electric generators would also be necessary for option 1). An interruption of electrical current under option 1) could cause the expellers to freeze, requiring that they be taken apart.

Plants of this size should also have warehousing facilities for both raw material and meal, as well as finished product. The storage capacity, in view of transport conditions, should be of the order of a week's stock. The plants should also have their own boilerhouse with a high pressure boiler.

Both types of plants should be installed with a refinery to process different crude oils into an edible condition. In both types of plants oil can be taken from the low pressure expellers, filtered, and sold as virgin oil, e.g., sesame oil, which is much in demand as crude oil in Somalia. Otherwise, refining is required. After refining the bland product can be drummed, put in larger tins or plastic bottles. The ICD mission members would recommend packaging the oil in sealed plastic bottles to prevent adulteration (intermixing cheap and expensive oils), a practice often in use in Somali markets.

Comparison of edible oil output for double expeller and solvent extraction-equipped mills

This section compares the potential output of a plant of a capacity of 150 tons seed/day under the two different options. For this, certain assumptions are made regarding the oil content of the different oilseeds:

Sesame	48% oil
Cotton Kernels	30% oil
Sunflower	35% oil
Safflower	30% oil
Groundnut	50% oil

After double expelling (option 1)) 6% oil will remain in the cake, whereas on extraction (option 2)) 0.7% of oil remains in the meal. For illustrative purposes the following scenario takes into account major oilseeds that are currently available or under experiment in Somalia. The proportions are hypothetical, but bear a rough relation to the possible availability of such raw materials.

50% Sesame	25 weeks of 5 days	125 x 150 = 18,750 tons of sesame
10% Cotton	5 " " 5 "	25 x 150 = 3,750 tons of cotton
16% Sunflower	8 " " 5 "	40 x 150 = 6,000 tons of sunflower
10% Safflower	5 " " 5 "	25 x 150 = 3,750 tons of safflower
14% Groundnut	7 " " 5 "	35 x 150 = 5,250 tons of groundnut

100% 50 wks 250 days = 37,500 tons of oilseed on the basis of these assumptions the following yields for Option 1 are obtained:

Option 1

Sesame	18,750 tons seed =	10,372 cake +	8,378 tons oil
Cotton	3,750 " " =	2,793 cake +	957 tons oil
Sunflower	6,000 " " =	4,149 cake +	1,851 tons oil
Safflower	3,750 " " =	2,793 cake +	957 tons oil
Groundnut	5,250 " " =	2,792 cake +	2,458 tons oil

Total: 37,500 tons seed = 22,900 cake + 14,601 tons oil

For option 2) a solvent extractor is assumed with a capacity of 150 tons of soyabeans per day. Solvent extractors are measured by their soybean processing capacity; they will generally have a higher capacity for other oilseeds. Normally, soyabeans are passed directly through the solvent extractor. They are not processed through the low-pressure expeller, as other oilseeds with a higher oil content would be. Therefore, the total capacity of a solvent extractor-equipped plant when processing other oilseeds than soya is determined by the capacity of the low pressure expeller. If the full capacity of the solvent extractor in option 2) is to be utilized, a low pressure expeller with greater capacity than the one in option 1) will be required. The examples presented below include figures for both a plant with the expeller capacity of option 1) as well as for one with a larger expeller.

Solvent extractors will extract somewhat less of other cakes depending on the percolation speed and the specific gravity. For cottonseed cake, the capacity is 80% of that of soya. For groundnut, safflower and sunflower it is of the same order. For sesame it might be even higher, say 90%.

These results, other than soya, are based on extracting expeller cake with some 15% of oil from the low pressure expeller.

Option 2) allows a faster production schedule than option 1). Thus, processing the same volume of oilseeds as listed for option 1) will leave an additional 10 weeks (50 working days) for the processing of additional seeds. Under these circumstances a solvent extraction plant could also process soyabeans (not possible with a double expeller mill), which the ICD mission has recommended be obtained through USAID's PL 480 program until local production of other oilseeds can satisfy processing demand. The processing scenarios presented below include the option of 10 weeks' processing of soyabeans, in addition to the other main oilseeds. For demonstration purposes, a scenario of no soyabeans processing, and increased volumes of other oilseed (to take advantage of option 2)'s faster production schedule) is also presented.

The figures for all processing scenarios are summarized in Table V.

Table IV

Example based on oil mill of 150 tons seed/day

Operating for maximum of 50 weeks per annum (5 days per week)

Option 1 - Double expeller mill (low pressure screw expeller and followed by high pressure expeller)

2 - Single expeller (low pressure screw) followed by solvent extraction

<u>Crop</u>	<u>Operating Time/Crop</u> (Weeks)			<u>Quantity of Seed</u> (Metric Tons)			<u>Oil</u>			<u>Cake</u>	<u>Meal</u>	
	Opt1	Opt 2a	Opt 2b	Opt1	Opt 2a	Opt 2b	Opt1	Opt 2a	Opt 2b	Opt 1	Opt 2a	Opt 2b
Sesame	25	25	17	18,750	27,500	18,750	8,378	13,062	8,883	10,372	14,438	9,867
Cotton	5	5	5	3,750	3,125	3,750	957	1,100	1,320	2,793	2,025	2,430
Sunflower	8	8	8	6,000	6,240	6,000	1,851	2,160	2,077	4,149	4,080	3,923
Safflower	5	5	5	3,750	3,125	3,750	957	1,100	1,320	2,793	2,025	2,430
Groundnut	7	7	5	5,250	7,140	5,250	2,458	3,580	2,550	2,792	3,550	2,700
Soya Bean	-	-	10	-	-	7,500	-	-	1,300	-	-	6,200
Total	50	50	50	37,500	47,130	45,000	14,601	21,012	17,450	22,899	26,118	27,550

Notes i) Opt 2 (a) represents results when same time is used per crop as in Opt 1

Opt 2 (b) represents results when same quantity seed per crop as in Opt 1

ii) Low pressure expellers oil extraction leaves Cake with 15% oil content

Double expellers	"	"	"	"	"	6%	"	"
Solvent extraction	"	"	"	"	"	0.7%	"	"

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Sesame

135 tons of cake with 15% of oil in cake, is derived from 220 tons of seed that has produced 85 tons of oil. This means that with a 50% timeshare of the mill, 125×220 tons = 27,500 tons of sesame seed can be extracted delivering $85 + 19.5 = 104.5$ tons of oil/day. This can be obtained if there is sufficient low pressure expeller capacity available. Over the 25 weeks this represents 13,062 tons. On the other hand, if there is less seed available one would have to work less weeks at less throughout, i.e. 17 weeks instead of 25 if there is only 18,750 tons of seed available as in option 1. These spare weeks can be used for other seeds. However, sesame and groundnut are the best yielding seeds.

To have some comparative figures, in these 17 weeks, crushing 18,750 tons of seeds, 8,882.5 tons of sesame oil is recovered or some 500 tons of oil more than in option 1.

Groundnut:

120 tons cake/day with 15% oil is derived from 204 tons of seed which produced 84 tons of oil in the low pressure expellers. The cake will give by extraction another 179 tons of oil. This is a total of 102 tons per day. Running the plant on groundnuts will give 3,590 tons of oil. On the other hand, if only 5,250 tons of seed are available one would run the plant for about 35 days and produce in this period 2,550 tons of oil.

Cotton/
Safflower:

120 tons of cake/day with 15% oil in cake is derived from 146 tons of seed which produced 26 tons of oil in the low pressure expellers. This cake will give 18 tons of oil by extraction. To treat the 3,750 tons of seed, 5 weeks of operation on each seed would be necessary producing $(26 + 18) \times 60 = 2,640$ tons of oil instead of 1,914 tons in option 1.

This shows the higher return on seeds with a relatively low fat content, on the one hand, but to handle the whole quantity of seed available 20% more time is necessary. If the extraction plant were only available for the same period allotted to these seeds in option 1, 2,200 tons of oils would have been produced, which is still some 300 tons more than in option 1.

Sunflower: 120 tons of cake/day with 15% of oil in the cake is derived from 156 tons of seed which produced 36 tons of oil in the low pressure expellers. This will give 18 tons of oil on extraction. To treat 6,000 tons of seed, 38.5 days (8 weeks) will be required; in all 8 weeks and in this period 2,077 tons of oil is produced. This is some 220 tons of oil more than in option 1.

Soyabeans: Owing to the faster production in option 2 there are 10 weeks or 50 working days available for additional seeds. If the plant were to process imported or locally produced soya in this period it could absorb 7,500 tons of beans, producing 6,200 tons of meal and 1,300 tons of oil.

From these figures it is clear that the eventual higher expenditure must be covered by the higher return on oil. Another point which arises is that to upgrade the cake or meal it might be advisable to build a small compound feed mill where, together with some by-products of the milling industry (bran) or some cassava and molasses, a useful product can be made for fattening cattle at the ports of export or, in the case of soybean meal, for poultry.

Representative cost estimates for processing plants of different types and sizes are included in Annex IV. This annex contains price quotations from several manufacturers which were submitted at the request of the ICD mission's processing experts. They are enclosed in this report to provide guidance on the order of magnitude of required investments for processing plants, and to illustrate the types of equipment that would normally be required. They are not intended to endorse any particular type of equipment or individual manufacturer. Based on such information, the mission has adopted a figure of \$10 million as the approximate cost for a processing plant of 100-200 tons capacity including refining functions and all costs for installation and utilities.

The existing edible oils plant in Mogadishu

The Mogadishu edible oil mill, constructed in 1977, and operated by the government, ceased operations in 1983. The mill is of the type described in option 1), and was built with a production capacity of 20 tons of oil per day. The ICD team was asked to visit the plant and give its views on the potential for its rehabilitation. The mission's view, based on

examination of its construction and equipment, and conversations with knowledgeable individuals, is that rehabilitation of the plant is not an economically viable proposition. The plant lay-out is unsatisfactory, and the equipment is too varied, antiquated, and in a very poor state of repair. To rehabilitate the equipment is not a cost effective option. Another major problem with the mill is that the plant components have unmatched capacities. The mission suggests that the plant be dismantled, with two or three salvageable components (e.g. the Breda expeller) preserved for later utilization. All nonsalvageable components should be sold for scrap. The buildings would be adequate for warehousing should another plant be built on the same site.

Possible sources of external financing and support for new processing operations

The ICD mission has identified several possible sources of financial and technical support for new processing operations. Financial assistance for small expellers could be obtained through the United Nations Capital Development Fund, which has set up a revolving loan fund for small enterprise development in Somalia. This could be coordinated with technical assistance from other U.N. sources, or from such private voluntary organizations (PVO's) as Partnership for Productivity, which currently supports small business activities by providing technical and managerial assistance to local entrepreneurs. Other PVO's are also providing assistance to small-scale economic activities, many with financial support from USAID. Ways should be developed to integrate assistance to edible oil processing activities through ongoing programs supported by USAID.

The import of small scale expellers by commercial importers is also being supported by the U.S. Commodity Import Program (CIP), which facilitates the acquisition of equipment manufactured by the United States or developing country sources. A coordinated effort of CIP-imported equipment and local currency loans to small entrepreneurs could provide an important stimulus to the small-scale processing sector.

The ICD mission also recommends that proceeds from the sale of food aid edible oil or oilseed shipments be allocated to the development of the processing sector, both for small-scale expellers as well as larger plants. This effort should be closely coordinated with financing for other edible oil industry activities from food aid proceeds, as is recommended in more detail later in this report.

ICD mission members contacted officials of the Directorate General for Development of the European Economic Community, in Brussels, regarding possible financing for larger scale processing operations. It appears that, should such operations be supported by the government, and deemed economically viable, financing in the form of equity participation or working capital loans to Somali entrepreneurs could be made available from the

EEC Development Bank in Luxembourg. The ICD mission suggests that this possibility be further explored, and that other public sources of equity or loan financing for the private sector be approached. Such sources might include the International Finance Corporation (IFC) of the World Bank, or USAID's Bureau for Private Enterprise.

THE ROLE OF FOOD AID IN STIMULATING THE DEVELOPMENT OF THE EDIBLE OILS INDUSTRY

An estimated 17,000 tons of edible oils entered the country as food aid in 1984. Approximately 40% of that amount was destined for refugee and Food for Work programs administered by international agencies. The balance entered under such concessionary government-to-government food sales programs as Title I of the United States PL 480 program. This oil was monetized by the government through public sector distribution channels. In the case of such sales of U.S. Government oil shipments, the proceeds go into a special account for development purposes. Expenditure of funds from this account are for projects agreed upon between the Government and USAID.

In 1984 the government had planned to auction a percentage of U.S. food aid oil shipments to the private sector. These plans were not carried out, and all food aid oil was distributed through public channels. For 1985, however, the mission understood the government plans to auction 40% of food aid oil from the U.S. to the private sector. The long term objective is for all food aid oil to be sold at auction.

The ICD mission recognizes the very valuable role played by food aid imports of refined oils in helping to meet Somalia's large market deficit, and in making the product available to Somali consumers at affordable prices. However, the mission strongly believes that if a long-term strategy of self-sufficiency is to be successfully carried out, and if incentives are to be provided to increase local production and processing of edible oils, modifications in the nature of the food aid program for edible oils must be considered now. Otherwise, such programs could eventually act as a disincentive to industrial growth.

The ICD mission recommends that food aid donors consider the possibility of changing the nature of edible oil shipments from refined oils to raw materials; that is, to shipments of unprocessed oilseeds. Such shipments could then be crushed and refined by the expanding Somali processing industry. Intermediate oil products, i.e. crude oil, could also be brought in under food aid programs and refined by the local industry. This option, however, would be far less preferable to that of bringing in unprocessed oilseeds.

Food aid oilseeds could be sold by the Government to the private sector at auction to the highest bidder. Purchasers would most

likely be processors themselves or wholesalers. Funds generated in this way could be credited to a specific budget item in the food aid development account, and used exclusively for financing the development of the local edible oils industry. Specifically, these proceeds could finance:

- 1) The National Oil Crops Research Program, which would be geared to addressing the agronomic problems of edible oil crop production in Somalia.
- 2) Local currency credit facilities for establishing and maintaining new processing operations by local entrepreneurs, including facilitating the acquisition of imported equipment and spare parts under such programs as the U.S. Commodity Import Program. These credit facilities could also be used to support the start-up of storage, transport, and other marketing activities related to the edible oils industry.

Changing the composition of food aid oil imports to raw materials could help accomplish several objectives. It would reduce the disincentive that cheap competition from imported refined oils would pose to the local processing industry. Concern over this disincentive was voiced repeatedly to the ICD mission by local entrepreneurs. It also would alleviate the raw material shortages that would inevitably plague a growing processing industry while the agricultural sector gears itself to respond to the new incentives and market opportunities offered by an expanded processing industry. The higher prices for the commodity paid at auction would, in addition, not be disruptive to local production, and would allow local production to replace imports as output increased. Constant monitoring of the local supply situation should be carried out, and a gradual phasing out of food aid shipments be implemented, until such shipments are no longer required. The National Edible Oils Industry Task Force could play an important role in the coordination between the public and private sectors to gear the volume and type of food aid imports to the needs of the local processing industry.

Most importantly, such an approach would link the food aid program to the evolution of the local edible oils industry, providing the stimulus to development that is the key objective of the program.

This concept was discussed favorably with government and food aid officials in Somalia, Rome, and Washington. The mission recognizes that this proposal poses important challenges for policy changes and coordination by both donors and the recipient government. However, there are successful case histories of this approach, particularly in the dairy industry, which can provide insights for Somalia.

CURRENT EDIBLE OIL MARKET CHARACTERISTICS

Consumer Habits

Traditional Somali dietary habits include a high consumption of fat. Per capita consumption of edible oils is believed to be 6 - 8 Kg/year depending on which annual consumption figures are used.

Increases in per capita consumption are likely to continue as industrialization and urbanization trends continue, and disposable income increases. Presently, the Somali consumer has the following cooking and eating oils available:

Sesame Crude Oil

Apart from its use as a cooking medium, it is also used as dressing and at times for its therapeutic value as a mild laxative. It is regarded as having a high nutrient content and generally commands a premium price.

Butter/Ghee

As a large portion of the Somali population leads a nomadic life, they rely on butter/ghee obtained from their animals, for both cooking purposes and eating.

Imported Edible Oils

As about 66% of the country's consumption is currently met through imports, it could be reasonably stated that the bulk of edible oils consumption is accounted for by imported refined oils, the major exporting countries in recent years being U.S.A., Italy and The Netherlands. By implication, the Somali consumer has become accustomed to standard quality products and will not settle for anything lower in quality, once local production gears up enough to meet the domestic demand.

Although most of the edible cooking oils imported are soya bean and palm oil, olive oil is primarily used for eating purposes. Some butter and margarine is also imported.

Although Somali consumers prefer sesame oil for eating purposes, they have no bias against refined oils for cooking purposes; thus eventual local production of refined soya or other edible oils for cooking purposes will be acceptable to the consumer.

As data on income distribution, household composition, education level, etc., are not available, it is not possible to provide an accurate profile of the edible oils consumer. However, some generalizations can be made based on knowledge gained through various studies and observations made by the mission:

1. Consumers' lack of disposable income and their ability to spend only a limited amount at one time makes the cash purchase size a very small one. Thus for quite some time to come, typical consumers are likely to continue purchasing their requirements on a daily basis.
2. Consumer purchases are also influenced by uneven availability of the product and the wide fluctuation in prices - all consequences of overwhelming dependence on imported edible oils.
3. The erratic availability of preferred brands also influences consumer buying habits. Considerations other than consumer preferences govern the import of edible oils.

These conditions will have to be taken into account - and counteracted when possible - as the country moves towards self-sufficiency in edible oils.

The Present Consumption of Edible Oils

The lack of accurate consumer research findings and reliable data on other variables means that marketing projections in Somalia are of dubious reliability.

However, using the information available from the Patterson/Noor and Somconsult reports and relying on the best consumption estimates of the Somali Government and aid bodies operating in Somalia, the country's edible oils consumption in 1984 is believed to have been of the order of 45,000 in tons.

Based on this figure, the estimated consumption for 3 preceding years would be:

Estimated Edible Oils Consumption - 1981-84

<u>Year</u>	<u>Population</u>	<u>Consumption</u>	<u>Consumption</u>
	(000's)	(Metric Tons)	(Kg/Year)
1981	4900	35100	7.2
1982	5047	38100	7.5
1983	5200	41400	7.8
1984	5356	45000	8.4

NOTE: Population growth rate taken at 3% per year preceding years consumption worked out taking 1984 figure as the base for 1984.

Present Distribution of Edible Oils

The present sales/distribution of indigenously produced sesame and imported edible oils is conducted in the following manner:

Distribution of Local Production

Sesame is mostly crushed by expellers and is predominantly sold direct to the consumer by the crusher. Another method of distribution is through small retailers who locate themselves near the expelling facilities. The consumers bring their own bottles, bowls or other suitable containers.

The retailers, mostly women, reuse empty imported edible oil bottles or tins. As retailer turnover is small, they generally buy only a couple of litres of oil at a time. The expeller operators also accept seeds from individuals for crushing thereby enabling the consumer to obtain oil from the sesame seed he supplies.

It was noted that sales of locally processed oil decline if the prices of imported edible oils are reduced, suggesting that the consumer, being price-conscious, is willing to substitute imported oil for the generally preferred locally extracted sesame oil.

Distribution of Imported Edible Oils by ENC

The import of food aid edible oils is handled by an autonomous public body, Ente Nazionale Commercio or ENC as it is commonly called.

Currently ENC sells and distributes food aid oil to public enterprises and institutions such as the armed forces, hospitals, colleges, universities, as well as public sector employees who purchase oil supplies through respective distributive channels set up for the purpose.

With the Government's eagerness to decentralize and privatize business, the quantity of edible oils imported by ENC and being offered to the private sector, through auction, should gradually increase - ENC was expected to auction 30% of the total in 1984 (this was not done but some oil was released to the private sector to help stabilize prices) and the mission understood. the government's plan is to auction 40% of the total in 1985. Ultimately, most if not all oil would be released in this way.

Import and Distribution by Private Traders

Private traders may also import edible oils provided they can raise the required foreign exchange by themselves. Such import operations are undertaken by a large wholesaler or a pool of retailers. The importer then sells the imported stocks to a wholesaler or retailer in carton lots (4-6 tins) to what may be described as retailers. These kinds of importers generally make 15 to 20% profit on their investment.

Import and Distribution for Refugee Aid and Food for Work

Agencies such as the World Food Programme (WFP) and the UN High Commissioner for Refugees (UNHCR) undertake their own import and distribution of edible oils. Some of the quantities handled by such bodies do get into retail channels and finally into the hands of ultimate consumers. Thus the edible oils so made available also constitute a source of supply.

Smuggled Edible Oils

It is common knowledge that some quantities of edible oils get smuggled into the country fairly regularly and supply some regions of the country, particularly in the North.

Historical Trend of Edible Oils Prices and Current Situation

Over the last four years, owing to factors such as periods of acute shortages, the devaluation of the Somali shilling and speculative practices, the prices of edible oils at all levels have been subject to considerable fluctuations with the trend a consistently upward movement.

Changes in retail prices in 1982 and 1983 were relatively minor. In 1982, there was an actual decline (20-30% in prices for all types of edible oils) before prices again increased in 1983. However, the highest per litre increase has been seen in 1984 - approximately 480% in case of most-edible oils except sesame oil where it was over 135%.

The wholesale and retail prices of available edible oils at the time of ICD mission's visit were as follows:

<u>Oil Type</u>	<u>Wholesale So. Sh./Kg.</u>	<u>Retail Price So. Sh./Kg.</u>
Sesame Oil (local)	120-125	130-145
Olive Oil	145	150-165
All other imported	110	120
Vegetable Oils		

From the consumer's viewpoint, a major frustration is lack of stability of retail prices over a period of time which is due to factors that are difficult to control. Usually sesame oil has commanded a price premium over other vegetable oils except for olive oils which brings the highest price at all levels.

Profit Margins at Various Levels

Following appears to be the general pattern of profit margins at various marketing stages:

Direct Importers:	20 - 25%
Warehouse Owners/ Large Wholesalers:	30 - 40%
Retailers between	9 - 15%

As too many middlemen exist in the marketing system, the end price of edible oils is unnecessarily increased and has to be borne by the consumer.

Packaging of Edible Oils

Locally extracted sesame oil is not known to be packaged; it generally is stored by the traders in the empty imported oil and other containers that are available. Similarly, the consumer also receives his purchases in imported oil empties, bowls or other containers.

Some brands of edible oils, particularly privately imported or smuggled ones, are available in convenient consumer packing. These containers are either of tin e.g., Chief brand cooking oil or of some form of plastic as in the case of Pine cooking oil.

The contents generally are about 3.78 litres. As most edible oil purchases are small quantities, shopkeepers with small and medium size businesses prefer to buy 16 Kg. packages.

Proposed Marketing Pattern for Edible Oils Industry as the Country moves towards Self-Sufficiency

The following recommendations are for marketing options to support and facilitate the mission's views on developments in raw material production and processing of edible oils

Relation between Processing and Marketing Functions

The location of new processing capacity must take into account a number of factors such as the source of raw material and its distance from the factory, possible transportation arrangements for raw material shipments, storage at both the production and processing sites, availability of water, power and other infrastructural requirements and proximity to the market.

The mission's view is that the expansion of small scale expellers in the rural and suburban areas will continue to satisfy a major portion of the market for crude edible oils. However, new processing capacity to produce replacements for imported refined oils, which are largely consumed in the urban areas, should be located as close as economically feasible to those markets.

A transportation system to provide refined oils in rural areas and in the North of the country will also have to be planned. In fact, distribution of the product to the North presents a major logistics problem as there is virtually no coastal shipping at this time and the area has traditionally been a market for smuggled or other low cost imports, particularly from the Far East.

In this context, estimates of regional edible oils consumption, supposedly available from ENC, could be consulted. Since urban areas represent the major portion of the edible oil demand, they will be the logical locations for new processing capacity, with Mogadishu probably ranking first for such consideration.

Projected Demand of Edible Oils for 1985-1990

Accepting 45000 metric tons as the base consumption figure for 1984, the following consumption projections were considered to be quite reasonable by members of the ICD mission, assuming a population growth rate of 3% per annum:

<u>Year</u>	<u>Population (in -000)</u>	<u>Edible Oil Consumption Projection - 1985-1990</u>	
		<u>Projected Edible Oil Consumption in M/Ton/Year</u>	<u>Projected Per Capita Consumption in Kg/Year</u>
1985	5516	47000	3.5
1986	5681	50200	8.8
1987	5851	53900	9.2
1988	6026	58200	9.6
1989	6207	61700	9.9
1990	6393	65000	10.2

The ICD mission members were of the firm view that by the year 1990 the total edible oil market of Somalia will be approximately 65000 metric tons.

The reasons for the growth pattern as given in the table are:

- a. The population of the country will continue to grow at the rate of 3% which naturally will cause consumption to expand every year.
- b. With better availability, oil consumption will be stimulated. The present unsatisfactory supply situation leads to the substitution of oil by some other fats.
- c. There should eventually be some conversion to edible oils from other fats presently being used for cooking such as butter and ghee. The process of urbanization, which will be stimulated by overall development in the country, may also indirectly cause edible oils consumption to increase.
- d. Over the coming years, the disposable income and, therefore, the purchasing power of Somalis is likely to improve as more opportunities for jobs and improving prospects for higher incomes will result from Government development plans and continued encouragement of the private sector.

Marketing Options for a Strategy of Self-Sufficiency

Evolution of the market system will largely depend upon changes in the production and processing parts of the entire agribusiness system. However, a number of policy and operational initiatives can be planned in the marketing area to facilitate the desired change of the entire agribusiness system. Some of these are as follows:

Refined Edible Oils

The physical attributes of the product in terms of color, odor, flavor and taste must be in line with the oils which are being imported. It will be essential to establish standards and specifications for each of these variables which then must be rigorously adhered to.

The product to be launched should be given an appropriate brand name which should be easy to pronounce and be suggestive of the use and benefit of the product. It should preferably be a brand name that lends itself to pictorial presentation to facilitate identification and recognition of the brand by illiterates.

Since most consumers purchase their edible oil requirements on a frequent basis, the bulk of the packing will have to be in large containers - the recommended quantity being about 16 Kg. For small retailers and consumers buying on a monthly basis 4 Kg. and if feasible, 2 Kg. packing could be considered. According to the purchasing pattern of consumers, about 80% of the total production will have to be packed in the larger 16 Kg. containers.

As tin containers are expensive, it is recommended that a more economical plastic container might be fabricated locally. The packing should be tamper-proof and should be reusable.

In the case of 16 Kg. bulk containers, empties might be purchased from the main consumption centers in order to keep packaging material costs down.

While 16 Kg. containers will not require any master packing, the proposed 4 Kg. and 2 Kg. containers could be placed in cardboard cartons of 4 and 8 units respectively.

Sesame Crude Oil

Sesame crude oil, produced by small expeller operators, might be packed under a brand name at refined oil plants. The sesame oil so produced could, over a period of time, develop a quality image of its own and go a long way toward providing consumers with a standard and consistent quality product.

As with refined edible oils, providing brand names for crude sesame oil will be a convenience to the consumer in identifying and purchasing the product he has confidence in, and will also greatly benefit the manufacturer in building an image for consistent good quality which can command premium prices.

As a high percentage of sesame oil is used for dressing, eating and in some quarters for its medicinal value, it should be packed in 4 Kg., 2 Kg. and 1 Kg. plastic bottles or any other economical packing material.

The master packing could be in a cardboard carton in the following manner - 4 Kg. x 4, 2 Kg. x 8 and 1 Kg. x 16.

Proposed Distribution System

It is not enough to produce a good product - characterized by consistently high quality - it is also equally important that the product is distributed so that consumers are able to easily procure it at the right price. This calls for an effective and efficient distribution network which will assure consistent product availability, protecting the consumer against shortages.

There are two types of consumers of cooking and sesame oil:

- a. Those procuring their requirements from private retailers.
- b. Those associated with Government employment and purchasing their requirements from their respective public outlets.

Efficient channels of distribution can be developed for both types.

The private sector system would be set up in this fashion:

Manufacturer	Distributor/Agent	Wholesaler Retailer	Consumer
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This will apply to open market operations serving private sector trade and thus the consumers relying on this kind of trade for the procurement of their edible oil requirements. For public institutions or Government-operated outlets, the following channel of distribution is recommended:

Manufacturer	Government Operated Outlets	Consumer
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In the first case the distributor agent to be appointed will be assigned a territory and will exclusively handle distribution of the product within the assigned area. The distributor's/agent's main functions will comprise:

- a. Purchasing stocks from the manufacturer with the attendant financial responsibility.
- b. Providing adequate storage and distribution facilities as may be required in the judgment of the manufacturer.
- c. Transporting stocks, maintaining required inventory levels and implementing the manufacturer's policies regarding product distribution.

For effective planning and control and to assist the distributor carry out proper distribution of the products, the manufacturer could assign one or two of his staff to advise and assist the distributor where larger urban areas are involved. For smaller areas, a representative of the manufacturer could visit the distributor once a month for a few days.

A 5-6% return on investment is considered a proper incentive for the agent. This compensation will be provided for in the price structure.

The mission believes that such opportunities will attract Somali entrepreneurs, since such ventures offer stable income, nominal risks and add to the social prestige and standing of the individual. Public institutions which purchase oil for resale should be considered wholesalers and be charged a fixed price. In order to maintain a uniform retail price for consumers, it will be important that the manufacturer pay for all expenses pertaining to transportation and other local levies, and ensures delivery to the government institutions which will actually do the distribution. To be able to do that, the manufacturer could

figure an average cost for these factors for his area of operation and add it to its own cost before determining the price structure for his product.

Pricing the Product

An important consideration for setting the price structure without government intervention is to ensure that the retail price is not so low as to encourage products to be smuggled out of the country, nor so high that competitive products are smuggled into the country.

Prices ought to reflect the cost of production plus a fair return for all those involved.

Under the proposed distribution system, the manufacturer should specify prices at three levels i.e., manufacturer to distributor, distributor to wholesale/retail trade and at consumer level.

In the case of government institutions, an intermediate price - a price between the distributor and trade - could be established so that such government institutions are able to sell the product to their consumers at a slightly lower price than the prescribed retail price. (But no lower than 5% in order to discourage resale to the black market.)

The recommended margin of profit for wholesale and retail trade is between 8% and 10% on investments.

An illustration of how the price structure is to be formulated is provided below:

	<u>Per 2 Kg. Packing</u>
Manufacturer to Distributor/Agent:	So. Sh. 242.4
Profit of Margin :	So. Sh. 12.1 or 5%
Distributor to Trade :	So. Sh. 254.5
Margin of Profit :	So. Sh. 25.5 or 10%
Suggested Trade to Consumer :	So. Sh. 280.0 per bottle

For government institutions, either company to distributor, distributor to trade or a price in between the two could be prescribed. Doing so will enable them to sell the product slightly cheaper than the prescribed retail price, which generally is one of the objectives of such government institutions.

Promotion

While currently no advertising or promotional efforts at any level are being conducted - because of lack of competition and ease of selling whatever is available - promotion at consumer and trade levels will become necessary once supply approximates demand or tends to exceed it, a situation that may take 4-5 years to develop.

Such promotional efforts by entrepreneurs in the new, predominantly private sector marketing system that will emerge by 1990, should bring much greater stability to the edible oils industry, including such changes as:

- Supply of refined oils and crude sesame oil will become more available in response to demand and there will be a tendency for prices to remain more stable.
- A more efficient and effective distribution network will emerge which will be emulated by others for distribution of other consumer items.
- Hoarding and speculative buying of edible oils will be discouraged.

- Efficient producers will be encouraged as brand loyalties will develop.
- Less efficient manufacturers will either drop out or will become more efficient.
- More private sector entrepreneurs will become involved at all levels of the agribusiness system which will help stimulate overall economic development.
- In general, the free market mechanism will find fuller play.

IV. IMPLEMENTING THE NATIONAL EDIBLE OILS INDUSTRY STRATEGY

The mission has recommended that an Edible Oils Industry Task Force be established to help formulate a national strategy for self-sufficiency and to provide coordination and guidance to the public and private sector activities that will be required to achieve the goal in 5 - 10 years.

This task force would be composed of leading agro-industrialists and appropriate government officials under the chairmanship of the Vice-Minister of Agriculture. Since communications between Somalia's private and public sectors have been difficult in recent years, the task force is an innovative concept with obvious risks. The strong support of USAID and other major development organizations would help to strengthen the role of the task force and improve its chances for effective action.

The national strategy will have to be structured within the context of the overall national development plan. To support the primary goal of edible oils self-sufficiency, a number of subsidiary goals should be established for each component of the integrated industry i.e., agricultural research, raw materials production, processing and marketing, taking into account the dynamic interrelationships that exist between all parts of the agribusiness system.

In preparing the overall strategy, there are several critical considerations which the task force must confront immediately including:

1. The role of Food Aid - Without clear-cut donor/recipient agreement on the role of edible oils food aid to support - rather than compete with - local industry, any strategy for self-sufficiency will be severely handicapped. The mission's recommendations seem "in tune with the times" regarding stated donor intentions to link food aid more with development and to work toward major reductions in such aid.

The intentions of the Somali government toward longer term goals will also be tested by the mission's recommendations. There is an opportunity here to use food aid to promote development which, if successful, will have value beyond edible oils and beyond Somalia. There is experience, particularly in the use of surplus dairy commodities to stimulate local dairy industry development, which can provide valuable insights to meet this challenge.

2. Processing Options - Somali entrepreneurs seem eager to invest in new processing plants but lack the knowledge about technology, capacity, etc., which a national strategy should provide. They also need to know more about supplier options, costs, etc., in order to evaluate the various proposals that are being presented to them.
3. Agricultural Research - The proposed program for edible oils will take several years to produce results and must, therefore, get under way as quickly as possible. This research program must maintain a sense of urgency, and a "user" orientation that links it, with the help of the Task Force, to the needs of farmers and processors and the demands of the market. While being incorporated within the new National Agricultural Institute, the edible oils program must also enjoy sufficient autonomy to operate as an integral part of the agribusiness system.

GOS/USAID/ICD Follow-Up Activities

To support the Task Force and assist implementation of the strategy, ICD would recommend follow-up activities such as:

1. The Council would establish a standing expert group to respond to Task Force requests for advice on management, economic, technical, research, marketing and other dimensions of the strategy. The 1985 mission would provide the core of this advisory group and other advisors would be added from the Council's membership as needed.
2. To assist strategy formulation, ICD could help the Task Force organize one or more enterprise development workshops. The Council's advisory group, together with representatives of national and international development organizations, would work with the Task Force and other Somali participants in assessing the options for integrated industrial growth and formulating the strategy.

3. ICD assistance to the Task Force on the critical considerations indicated above could be planned within the context of the workshop series or as a separate effort.

For example, a specific workshop session on processing technology options could review the range of equipment choices available and their technical and economic implications for Somalia's industry.

4. Once a strategy is set, ICD would consider appropriate advisory and technical assistance in such areas as:
 - a. Technological training and management development.
 - b. Local and foreign investment promotion.
 - c. Helping the Task Force monitor the progress of industrial development, according to the strategy, and advising on changes and modifications.

If the above ideas are of interest to GOS, the Task Force and USAID, ICD would request continued support from USAID to finance its participation in follow-up activities.

ICD ADVISORY MISSION TO SOMALIA
ON THE DEVELOPMENT OF A NATIONAL EDIBLE OILS INDUSTRY

At the request of the Government of Somalia and the U.S. Agency for International Development an ICD advisory mission will visit Somalia 21-23 April, 1985 to assist the government in the design of a strategy for the development of a national edible oils industry. The mission will assess the current structure of the edible oil industry and provide recommendations for achieving national objectives, including self-sufficiency in edible oil supplies; employment generation and creation of a new entrepreneurial opportunities in the agro-industrial sector. An ICD reconnaissance mission in September of 1984 reviewed several agro-industrial development needs, and agreed with the government and USAID that the edible oils industry should receive priority attention. The mission will be composed of the following ICD representatives:

H.J. Ringers, Industry mission leader and former Senior Technical Director, Unilever Edible Oils and Fats Global Division.

T. Applewhite, Industry expert, and Director of Research Services, Kraft, Inc.

S. Abdulla Rizvi, Edible oils marketing expert, and Marketing Manager, Treet Corporation, Ltd., Pakistan.

V.E. Gale, Agricultural Advisor, and ICD Senior Associate.

W.W. Simons, ICD Executive Director.

E.L. Gibson, ICD Program Coordinator.

Mission Terms of Reference

1. To assess, on an integrated basis, the present structure and operations of the edible oils industry in Somalia, with particular attention to the interrelationships between the production, processing, and marketing activities of the industry.

2. To examine options for increasing the involvement of the private sector in the industry, particularly small and medium-scale oilseed crushers and other entrepreneurs interested in investing in refining, transport, and marketing activities.
3. To examine options for increasing the agricultural production of key oil crops, particularly sesame, as well as the suitability of expanding the production of such alternative crops as sunflower, safflower, rape seed, and cottonseed.
4. To help the government develop an action plan for the integrated development of a national edible oils industry, outlining key policy and operational measures to be taken by government to promote the development of the industry, as well as recommendations for action by the private sector, USAID, and other international development agencies.

To carry out these Terms of Reference the mission itinerary will include contacts with senior USAID and Government officials, as well as representatives of other bi-lateral and multi-lateral development agencies. Contacts with executives of private and public enterprises will also be arranged, as well as with other entrepreneurs that could play a role in the development of the industry. The mission itinerary will also include field visits to production and processing sites outside Mogadishu, and other visits as appropriate.

The Industry Council for Development

ICD is a non-profit development organization which assists economic and social advancement in developing countries according to their national goals and at the request of their governments. ICD members are corporations in developed and developing countries which support the objectives and principles of ICD and which are willing to make expertise available as a contribution to the development process.

ICD's development service, which is based on this expertise, is generally carried out in cooperation with USAID, UNDP, and other international development organizations. Since 1980 the Council has received a grant from USAID to assist agro-industrial development.

Council activities are designed to provide practical assistance that produce tangible results related to national development priorities. Such activities include policy advisory services, the transfer of managerial and technological expertise, training, and investment promotion.

MISSION ITINERARY

20 - 28 April 1985

20 April Marlow, U.K. - Mission planning session.

21 April Mogadishu, Somalia - Mission arrival.

Morning

22 April Meeting with Mr. Louis Cohen, USAID Director and Program Office Senior staff.

Meeting with Dr. Mohamoud Abdi Noor, Vice Minister of Agriculture and staff of MOA.

Meeting with FAO representative.

Afternoon

Visit to Government edible oils mill.

Visit to small expeller operation.

Meeting with Mr. Arab Essa, Chairman of Arab Essa Company.

Morning

23 April Meeting with Dr. Abdullahi Sheikh, Acting Permanent Secretary of the Ministry of National Planning and PIP Project Manager.

Meeting with Vice Minister Mohamed Nur Alio, Permanent Secretary of the Ministry of Industry Abdullahi Hirad and associates.

Afternoon

Meeting with Ms. Paula Tavrow, Assistant Food for Peace Officer, USAID.

Mission meeting to begin report synthesis.

Morning

24 April Meeting with Mr. Hussein Dhimbali, Alfa-Laval distributor.

Meeting with Mr. Ibrahim Salah Ibrahim, Managing Director, Islah Commercial Agency.

Meeting with Mr. Omar Hashi Abdulla, Agricultural Chemicals Manager, Ciba-Geigy.

Afternoon

- 24 April Meeting with Mr. Ali A. Osman, Director, Somconsult.
Field trips to local retail markets.
Meeting with Mr. Hussen Ali O. Shego, President and Executive Manager, Somali Vegetable Oil Factory.

Morning

- 25 April Meeting with WFP/EEC - Mr. El Sayed Elkhatib, Logistics Officer, World Food Program.
Meeting with ENC
Mr. Ahmed Haaji Haashi, General Manager
Mr. Ahmed Abokar, Director of Planning
Mr. Ali Ahmed Mohammed, Director of Administration

Afternoon

- Visit to Somaltex (cotton industry), Balad
Mr. Abdi Shukri Mohamed, Personnel Officer
Mr. Abdikadir Mursal, Quality Control Director
Dinner meeting with Mr. Jama Botan, local businessman.
26 April All day field trip.

Morning

Meeting with officials of the Dheetiso Cooperative, Afgoi - Mr. Shariff Mukhtar Ibrahim, President, and associates.

Afternoon

Tour of Arab Essa farm.

Morning

- 27 April Meeting with Mr. Robert Borthwick, UNDP Resident Representative.
Balance of day - preparation of mission report.

Evening

27 April U.S. Ambassador's reception for ICD mission.

Morning

28 April Meeting with Dr. Isse, Assistant Manager, Hagi Weheliye & Sons Co. Ltd.

Meeting with USAID Director, Mr. Louis Cohen and Program Office staff.

Meeting with Dr. Mahamood Abdi Nur, Vice Minister of Agriculture.

Afternoon

Departure to Nairobi.

AGRO-INDUSTRIAL DEVELOPMENT

in Somalia

with particular reference to the
Edible Oils Industry

INTRODUCTION

At the request of the USAID Mission in Mogadishu, an ICD reconnaissance mission visited Somalia from 24 to 30 September 1984. The mission explored possibilities for the Council to assist Somalia with its agro-industrial development priorities.

The mission was composed of:

Walter W. Simons, Executive Director of ICD

V. E. Gale, ICD Senior Associate

The mission's Terms of Reference were:

- (A) Within the context of the national development plan, USAID priorities, and ICD criteria to review and assess agro-industrial development priorities in order to determine possible focal points for ICD assistance, with particular reference to the edible oil industry.
- (B) To discuss with relevant Government of Somalia (GOS) and USAID officials modalities for any eventual ICD activities in Somalia, including cost-sharing.

To achieve these objectives, the mission followed an itinerary (Annex I) which included contacts with senior USAID and Government officials, as well as representatives of other multilateral and bilateral agencies involved in agro-industrial activities. In addition, special efforts were made to contact executives of private sector enterprises, including local representatives of ICD member companies.

SUMMARY

Somalia is one of the poorest and one of the most "aided" developing countries in Africa; it is also a country where important changes are taking place that should speed the pace and improve the effectiveness of economic and social development.

The Government has turned from centralized planning and economic controls and has instituted policy changes to liberalize the economy, particularly by providing incentives for agricultural production and greater private sector involvement in many phases of the national economy. The Government has also shown its intention to put public sector projects on a sound commercial footing and to use management contracts and joint ventures to attract the managerial resources needed. These changes are consistent with the views of the IMF, World Bank, USAID, and other major donors.

With these positive changes in the policy and planning environment, the mission was optimistic that the Council might make contributions to Somalia's economic development that would be consistent with the Council's criteria and make effective use of the resources available through the membership.

The mission identified four areas for possible GOS/USAID/ICD cooperation:

1. To help establish a commercially viable integrated edible oil industry, capable of achieving self-sufficiency in approximately 5 years.
2. To assist in the expansion of the fruit and vegetable production, processing and packaging industry, with particular attention to the export market.
3. To facilitate the availability of improved seed for farmers through support for the introduction and adaptation of high-yielding varieties of oil seed crops, of cereals, vegetables and other agricultural products of primary importance.
4. To assist the livestock sector, especially through training and communications support for animal health.

The mission agreed with GOS and USAID officials that assistance to the edible oil industry should have the highest priority for initial cooperative activities. Edible oils are an important item in the national diet and are closely linked with agricultural production and the promotion of small- and medium-scale agroindustries in both rural and urban areas. Two-thirds of the country's supply of edible oil is currently imported. All sources agree that Somalia could be self-sufficient in edible oils within the next five years.

By promoting an integrated agro-industrial effort with close linkages to national development priorities including agricultural research, policy reforms, infrastructural and human resource development and financial resources, increased agricultural production, processing and marketing can better be achieved.

This will require a public/private sector partnership which fully utilizes the traditional entrepreneurial capabilities of the Somali people.

Initial Project Proposal

The mission has recommended an initial GOS/USAID/ICD cooperative project to assist the national edible oil industry in three phases.

1. An initial short research phase would be necessary to clarify options for integrating the industry and to develop essential information.
2. The second phase would be to develop a national strategy for achieving self-sufficiency in edible oils through a commercially viable industry.

This strategy would be prepared by a workshop which would bring together the key public and private sector officials, local business leaders and experts from international development organizations. ICD would create an advisory group of senior experts from its member companies with expertise in all stages of the edible oil industry. This advisory group would help guide the workshop discussion and assist in formulating a plan of implementation and related recommendations.

The workshop would utilize an agribusiness system analysis, prepared by ICD, to evaluate the various options in raw material production, processing, distribution and marketing within the context of commercial viability and on an integrated basis.

3. The results of the workshop would be the basis for policy revisions, technology transfer, training, etc. as necessary for the third phase of implementation. ICD would also consider ways to assist specific implementation needs through the advisory group and other cooperative activities.

The mission also discussed modalities for cooperation with GOS and USAID officials. It was agreed that pending ICD endorsement of the proposed project as well as GOS and USAID concurrence, an official request and project plan would be prepared by early 1985. Project responsibilities, including cost sharing, could be determined according to the ICD's usual arrangements with cooperating organizations.

BACKGROUND

Political

The Democratic Republic of Somalia was established on 1 July, 1960, incorporating the former British Somaliland Protectorate and the Italian Trust Territory of Somalia.

A revolution in 1969 led to a period when a Military Government sought to bring about economic transformation through "Scientific Socialism" under a Revolutionary Council. However, following a referendum in 1979 the President of the Republic, H.E. Major General Mohammed Siad Barre, introduced a new constitution providing for an elected People's Assembly which met for the first time in June 1980.

Recent trends have indicated a genuine desire on the part of Government to liberalize the economy and to examine how stability and growth might be achieved by better utilization of private sector resources.

Physical

The country covers an area of 637,000 sq. kilometers forming the "horn" of Africa. It has the longest coastline of any country on the continent, extending from northern

boundaries with Djibuti on the Gulf of Aden to its southern boundary with Kenya 3,200 kilometers away. The long western boundary with Ethiopia has been the source of numerous disputes culminating with war between the two countries in 1977-78.

The country can be divided roughly into three main ecological zones: the arid plains and range-lands of the north and center; the riverine areas served by the two major rivers, the Shabelli and the Juba, which rise in the Ogaden and traverse the country to the sea; and the mountainous areas of the north. It is estimated that 80% of the country is too dry for reliable cropping as the annual rainfall is only 200 mm or less. It is this rangeland which supports herds of camels, cattle, sheep and goats, supplying milk, meat and other produce to a population of some 4 million people and accounting for 70% to 90% of the foreign exchange earnings of the country.

Approximately 50,000 families are engaged in livestock production and about 200,000 families in crop production either on a subsistence basis or on small family-owned farms.

Of the 700,000 ha. of cultivatable land 540,000 is used annually for rain-fed agriculture, particularly sorghum and sesame. Twelve thousand hectares are under flood irrigation, producing maize, cotton, cowpeas, sesame and other oil seeds, and 50,000 ha. under controlled irrigation, growing sugar cane, bananas, citrus and other fruit and vegetable crops. The average rainfall is between 500-600mm per year in the inter-riverine areas, decreasing to 300-400mm further south. It is spread over two rainy seasons: the "Gu" season from April to July receives about 70% of the total rain, and the "Der" season, between October and December, when the remaining 30% falls. However, precipitation varies widely among regions and there is consequently a large variation in crop yields during a single season and a concomitant movement by nomadic pastoralists in the continual search for fresh grazing.

The fisheries sector comprises two distinct parts, the coastal fishing in the inshore waters which accounts for between 4,000 - 11,000 tons of fish landed annually, and the deep sea catches operated by foreign crews.

Agriculture

The Government has made determined efforts to act on these recommendations and decided that the main objective for the agricultural sector for 1984 is food self-sufficiency.

Priority will be accorded to projects which will provide the basic requirements for production or strengthen those already in existence. Steps will be taken to insure that the majority of private sector agricultural producers will have better access to essential inputs, extension services, and credit.

The 1984 agricultural development plan will be growth-oriented, and the following important elements of strategy will be implemented:

- (a) Adopt marketing and pricing policies which will encourage growth in production, raise rural living standards and generate employment opportunities in the agricultural sector.
- (b) Give priority to existing under-utilized facilities and completion of investment projects which, with relatively low funding inputs, can yield quick results.
- (c) Expand the area under controlled irrigation and improve the efficient use of water in existing irrigation projects through rehabilitation of
- (d) Expand and encourage rain-fed farming by private farmers through an appropriate pricing policy for farm products.
- (e) Initiate a research program to develop cropping patterns and agricultural practices which optimize the use of land and water resources.
- (f) Strengthen extension services backed by well-organized technology support including effective linkages with research programs.

The following table shows the actual production for the major crops over the last two years and the target figures set for 1984.

Table I

Agricultural Production 1982-1984

(gross value in millions of Somali schillings at constant 1980 prices)

	1982		1983		1984	
	<u>Production (tons 000)</u>	<u>Gross Value</u>	<u>Production (tons 000)</u>	<u>Gross Value</u>	<u>Target (tons 000)</u>	<u>Gross Value</u>
Sorghum	235	282	120	144	230	276
Maize	150	180	235	282	210	252
Rice	20	60	2.3	8	18	54
Beans	15	24	20.8	33	20	32
Sesame	57	171	59.5	179	50	150
Groundnuts	3.2	6	2.6	5	4	7
Cotton	4.7	14	4	12	5	5
Sugar cane	535	32	500	30	650	39
Bananas	75	59	85	70	105	86
Other fruits & Vegetables	102	213	83	174	102	213
		-----		-----		---
<u>Total</u>		1041		937		1124

[source: Annual Development Plan, Agricultural Sector, 1984]

In order to achieve these targets, the Government has taken steps to reform the appropriate public sector enterprises. By emphasizing better management of state farms and agricultural enterprises, the government hopes to increase their long-term economic viability.

A process of decentralization of responsibilities for management will be introduced and, where necessary, skills will be imported through management contracts. A good working example of this is the Juba Sugar project (JSB) where Bookers Agriculture International, under a management contract with the Ministry of Industry, successfully operates a 8,000 ha. sugar cane complex (4,000 ha. developed so far) under controlled irrigation. This project is also notable for the efforts being made to train local staff in certain key crafts and in middle management.

There are 29 public sector projects which are concerned with crops and irrigation. They are financed by both domestic (29.5%) and foreign (65.5%) sources. Of this total, 62.9% of the funds are to be spent on public investments, 5.1% on technical assistance, and 32% on supplementary projects as shown in the table below.

TABLE II

Investment Program

	Planned outlay (So. Sh. 000)	(US \$000)	Percent of total outlay
<u>Foreign sources</u> of which:	736,739	(29,469)	65.5
Grant	345,994	(13,839)	30.8
Loan	390,745	(15,629)	34.7
<u>Domestic sources</u> of which:	331,565	(13,762)	29.5
Gov't budget	309,565	(12,382)	27.5
Other	22,000	(880)	2.0
<u>To be funded</u>	56,550	(2,262)	5.0
<u>Total</u>	1,124,854	(44,494)	100

*(calculated at 1984 value of US\$ 1 = 25.00 So.Sh)

[source: Annual Development Plan, Agricultural Sector, 1984]

Water

Availability of water, the country's scarcest resource, remains limited from the lack of an organized management system for water allocation. There also appears to be lack of coordination within or between Ministries related to national water supply objectives. In rural areas, poorly maintained infrastructure has led to choked irrigation channels and excessive waste resulting in inefficient water use. However, the Government is in the process of recruiting a water management expert and is reported to be considering "water-use charges" to support plans for rehabilitating irrigation networks and expanding the area under controlled irrigation.

Research

Research activities are also uncoordinated, particularly in the livestock sector where there is a tendency to respond to specific needs in particular units only. There is no comprehensive research program to guide development either in the livestock sector or in the crop field, where the research program is also fragmented and is more a collection of activities developed by individual scientists. However, through the assistance of ISNAR (International Service for National Agricultural Research), efforts are under way to develop well-coordinated and carefully integrated research programs which will make the best use of the available resources. These reforms should reflect the interdependence of various sectors and strengthen the ties between research and extension services as they will be working jointly to test new practices in farmers' fields for practical economic viability, to study sociological conditions in the farming community, and to identify the main production and economic restraints.

Improving Input Supply and Use

These measures include steps taken to ensure that the import of fertilizers is adequate to meet the anticipated demand in 1984 and that the distribution is streamlined. At present, fertilizers are used mainly by the banana growers, on sugar plantations and for rice cultivation. However, there is also a growing demand from private farmers producing crops under flood irrigation and these have been included in the present total requirements. A urea factory is under construction, but it is not expected to begin commercial operation until late in 1984 or 85. The entire supply of fertilizers, estimated at 14,630 tons, will therefore have to be imported.

Most of the seed presently planted by farmers is selected from their own stocks of local varieties. However, during 1983 a small quantity of improved seed was produced and distributed from the FAO-supported "Seed Production and Improvement Project" based near Afgoi. The future objective is to multiply improved seed and improve processing and testing techniques.

Other inputs include spare parts and mechanical equipment which will be available through a "package deal" recommended by the extension services and covered by credit facilities from the Government. As irrigation is to receive high priority, special emphasis will be placed on spares and equipment needed for this purpose.

Credit

Credit facilities for farmers are provided through the Somalia Development Bank, which is responsible for the medium and long term loans for investments and development purposes. In 1982 more than half the 8.6 million So:Sh; advanced was for the purchase of tractors and water pumps. However, such loans are not available to small farmers, whose short term credit for operational purposes is generally supplied by commercial and savings banks. Government policy is to progressively increase the availability of agricultural credit both for investment and operational purposes.

Pricing and Marketing

Current policy aims at gradually reducing state intervention and leaving these functions to be increasingly performed by the private sector. However, the public sector will continue to regulate agricultural trade through the ADC (Agricultural Development Corporation) which will act as a buyer of last resort at a guaranteed minimum price and will continue to be responsible for storage of "institutional requirements" and emergency stocks. The overall aim is to provide more equitable prices for the producer. After several years of price controls, substantial increases have been noted since the revised policy in 1981 and again in 1982-83. The ADC will gradually change its role from price setter to "supporter and stabilizer" of prices closely adjusted to the international market for agricultural commodities.

One of the major aims of the policy measures described above is to stimulate private investment for the development of agriculture. Although local entrepreneurship exists, (as the Somali economy has always been private sector oriented) a statement of policy is needed so that the full scope of private sector activities can be clarified. A streamlining of the bureaucratic processes impinging on the private sector, including rationalization of taxes, tariffs, and subsidies, and better access to the essential inputs and financial incentives for increasing production are necessary for the better mobilization and utilization of private resources.

AGRO INDUSTRY CONSTRAINTS AND OPPORTUNITIES

"Supply side" Constraints

As already stressed, the most crucial factor in the poor performance of crop production has been the failure of Government to provide adequate price incentives to the producers. The following table demonstrates the decline in producer prices in real terms over the last 6 years, thereby reducing both farmers' incomes and incentives to plant more crops. The decline in banana production was of particular concern because of its value as an earner of foreign exchange.

TABLE II

INDICES OF REAL PRODUCER PRICES FOR SELECTED CROPS
1976-1981

(1975 = 100)

	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>
Bananas	117.0	116.6	106.0	85.6	58.7	84.5
Maize	95.7	108.1	98.3	79.4	79.7	62.0
Sorghum (white)	95.7	103.4	98.3	79.4	79.7	55.1
Rice	87.7	79.3	72.1	58.2	36.5	---
Cotton	105.2	103.1	36.4	75.7	54.3	44.3
Sesame	87.7	95.2	86.5	69.9	54.8	57.0

[source: IBRD].

Other factors which have contributed to the decline in crop production have been shortages of fertilizers, and lack of spare parts which have become increasingly short in supply as the balance of payments have been under increasing strain. As previously stated, the Government is very conscious of these problems and is taking action to alleviate them.

The inadequacy of public resources devoted to agriculture has been another important constraint. Although the 1982-86 five-year development plan has attempted to rectify this, it should be noted that over 20% of the funds allocated for agriculture are earmarked for the Bardhere Dam project, which is essentially infrastructural rather than agricultural in nature.

The US government's Commodity Import Program (CIP) is designed to help relieve some of these constraints by providing US dollar funds for Somali businessmen to purchase US equipment and supplies. The businessman has to deposit the Somali schilling equivalent in Somalia which provides a fund for local use. Other donor nations are being urged to set up similar programs to facilitate the import of critical spare parts, equipment, etc.

This lack of funds is further reflected in the decline of services at producer levels; roads and marketing infrastructure have been neglected and post harvest storage remains very wasteful.

Another key constraint is energy, particularly for irrigation (pumping) and processing. Diesel fuel for pumps is expensive and in short supply throughout the country. The Bardhere Dam project holds out the potential for critical new energy supplies for the Juba River project.

Public Sector Industries

Considering all the above, it is hardly surprising that the agro-processing industries have not thrived. This sector is dominated by some 15 state-owned enterprises designed mainly for import substitution purposes.

These include two sugar factories (SNAI) at Johar and JSP at Juba; a textile factory (SOMALTEX) utilizing imported as well as locally grown lint but now suffering from a shortage of the latter because of low producer prices; a fruit and vegetable canning plant (ITOP), also closed recently because of inadequate supplies of raw material; the Mogadishu milk plant where low prices for raw milk resulted in a decline in production from 3 million liters in 1978 to only 1 million liters in 1981; the Kismayo meat plant, another factory which suffered from a serious shortage of raw materials, in this case, animals, and was finally forced to close down.

In all these cases it is clear that efforts to impose low prices in order to provide cheap food, particularly in the cities, were a marked failure. In addition, management problems have beset nearly all Government sector projects. A system of fragmented managerial responsibilities and bureaucratic controls have not helped, but the scarcity of management talents and experience can only be overcome by greater efforts in management training or the willingness

of Government to use foreign managers or management contracts, at least for the time being.

Private Sector

These conditions have led the Somali Government to look to the private sector for fresh initiatives and better mobilization of the energies of individuals and the available resources for development. Already there are indications of a rapidly growing interest by private individuals in farming. The "new, progressive farmers", private businessmen who acquired wealth in other sectors, now operate agricultural holdings from 50 to 500 ha. They are very receptive to new ideas and new crops, such as cashew, jojoba, and watermelons, which are presently being tried. New cropping patterns with grapefruit and mangos, bananas and papayas, maize intercropped with cowpeas -- under both dry and irrigated conditions -- and permanent rotations of sesame, maize and cowpeas, are also being explored.

Government too is showing greater foresight by adopting more realistic approaches to practical ideas for increasing production. One example is the World Bank-sponsored drought rehabilitation projects where former nomads and immigrants are being settled on large scale schemes at Kutun Warrey and Sablach, employing Australian dry land semi-mechanized practices of strip farming.

In the controlled irrigation areas of the lower Shabelli, plans are being considered for setting up a water authority with the help of producers to rehabilitate irrigation networks and impose water managements. In addition, there are hopes that the proposed Bardhere Dam project on the upper Juba river will improve the output from existing large-scale sugar and rice projects in the area and lead to the introduction of other large crop and livestock projects which are presently being planned.

Experience has indicated that if the economy is to grow, the private sector must play a greater role in industry as well as in agriculture. There is some evidence to suggest that the smaller private-sector manufacturing industries are more economically viable than the larger enterprises under Government or quasi-Government control. Encouraged by these signs, a number of local entrepreneurs have stated their preparedness and desire to invest in agro-related industries. They realize that revival of agricultural supply will call for an expansion in processing facilities

and a redeployment of resources to cope with the opportunities which are emerging, both in the home market where consumer demand is rising, and for export.

APPENDIX IV

Cost Estimates for Processing Equipment

Mission members contacted several typical equipment suppliers in order to develop some guidelines for the cost of appropriate equipment and other facilities for processing plants in the 100 - 200 tons per day range.

Following are the rough estimates provided by Krupp of Hamburg, Germany several months ago:

Equipment

Oil Mill	6.1	Million DM	
Refinery	2.6	"	"
Steam, Electricity, Boiler			
Feed Water	<u>3.5</u>	"	"
F.O.B.	12.2		"
Transport to Somalia	<u>1.8</u>	"	"
Total C.I.F.	14.0	"	"
Duty 50%	<u>7.0</u>	"	"
	21.0	"	"
Installation	5.6	"	"
Contingencies	<u>2.3</u>	"	"
TOTAL	30.0	Million DM =	\$10,000.000.

to which has been added the cost of the site, warehousing, handling facilities and roads.

In addition, attached are quotes from three U.S. equipment contacts. In general, these estimates agree that the equipment installation, infrastructure and other costs will approximate \$10,000.000.

perz



CROWN IRON WORKS COMPANY

1229 TYLER STREET N. E.
P. O. BOX 1364
MINNEAPOLIS, MINN. 55440
U. S. A.
PHONE (612) 781-3101
TELEX 290204

June 27, 1985

Quotation #85-294

Mr. Thomas H. Applewhite
KRAFT, Inc.
801 Waukegan Road
Glenview, Illinois 60025

Dear Mr. Applewhite,

As per our conversation at the AOCs convention, we have put together budget figures for a 100 TPD cottonseed plant. Equipment and engineering is included for:

1. Murray Carver linting and separation room
2. Preparation and prepress equipment with Simon Rosedowns press
3. Crown solvent extraction plant

BUDGET PRICE: \$2,600,000 f.o.b. Manufacturer

Customer would need to furnish seed to lint room and pick up oil and meal from solvent plant. Brochures are enclosed describing the equipment.

NOT FURNISHED:

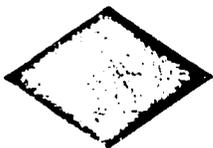
1. Freight
2. Buildings
3. Concrete
4. Tanks
5. Electrical starters
6. Piping
7. Wiring or conduit
8. Cooling towers or boilers

Crown has installed many cottonseed plants in the U.S. If the customer wishes to visit one of these plants, it can be arranged. Please let us know if we can be of further service.

Encl: CIW Brochure
SRL Brochure
List of Plants
Murray Carver Dwg. ML-108

Best regards,

Glenn D. Brueske
Vice President - Marketing



NEUMUNZ, INC.
PROCESS ENGINEERS

117 FORT LEE ROAD, LEONIA, NEW JERSEY 07605 USA
TELEPHONE: (201) 592-0980 TELEEX: 135 170 NEUMUNZ LEON CABLE: NEUMUNZ

July 3, 1985

Mr. Thomas H. Applewhite Ph.D.
Director of Research Services
Research and Development
801 Waukegan Road
Glenview, Illinois 60025

Re: 50 Ton Soybean
Solvent Extraction
Plant for Somalia

Dear Mr. Applewhite:

Based on your verbal request at the AOCs meeting, we have finally worked out the proposal based on a 50 ton soybean solvent extraction plant.

Proposal GN-678 gives you the cost of the preparatory, extractor and meal bagging section. Our plant follows our typical flowsheet 1201-R, while drawing no. 2396-R shows the flowsheet for the extraction section. In addition, a typical layout drawing showing the general building size and the arrangements of the complete plant is shown in our drawing no. 3691.

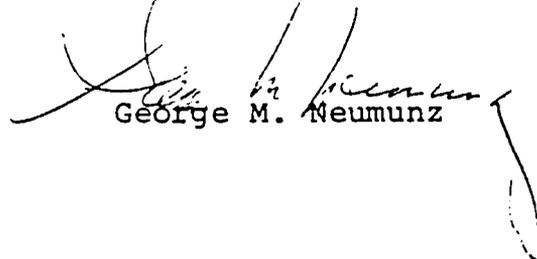
We have done our best to keep the prices low but it is difficult to do for a plant of this capacity. As you will realize, the cost of the pumps, valves, instruments, etc. remain the same as a larger capacity plant and the overall saving in reducing the size of the distillation and evaporation equipment is not of great help.

You will realize that we have not included any drying equipment nor any dehulling equipment should they wish to produce 48% protein soyameal. Also, the accessory items such as building, steam boiler, water cooling tower, storage tanks etc. are not included; nor have we included the piping and the electrical wiring and conduit. Normally, these items are furnished by the client but, if need be, we can offer them.

We hope this initial information is helpful to your client and we look forward to his comments after he has received our offer, which is enclosed, in duplicate.

Meanwhile, with my best personal regards, I remain,

Very truly yours,



George M. Neumunz

GMN/ad
Enc. Proposal No. GN-678
Flowsheet No. 1201-R
Drawing No. 2396-R
Drawing No. 3691



NEUMUNZ, INC.

OIL MILL & CHEMICAL ENGINEERS
117 FORT LEE ROAD LEONIA, N.J. 07608

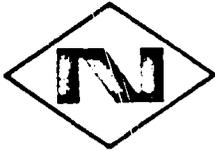
TEL: (201) 892-0900
TELEX: 138 170 NEUMUNZ LEON
CABLE: NEUMUNZ
P.O. BOX 287

To: Thomas H. Applewhite, Ph.D.
Director of Research Services
Research and Development
Kraft, Inc.
801 Waukegan Road
Glenview, Illinois 60025

Date: July 3, 1985
Proposal No. GN-678

For Export to Somali Republic (Africa)

No. of Machines	MACHINE DESCRIPTION	Total \$
50 TON SOYBEAN SOLVENT EXTRACTION PLANT PER FLOWSHEET SK-1201R AND LAYOUT DRAWING 3691		
<u>It.Qty</u>	<u>SECTION A - PREPARATORY EQUIPMENT</u>	
1	Intake floor hopper to be built by customer.	
2	Shift bin capacity 20 tons to be built by customer.	
2A 1	Bunting Permanent Magnet, SP450, 12" wide, 2 pole, complete with hinge, per catalog sheet 1122.	
2B 1	S. Howes, size no. 5, three screen two air super cleaner with fan and v-belt drives, all per special catalog page 105.	
<u>Including</u>		
1--5 HP, v-belt drive, suitable for 1800 rpm motor.		
1--5 HP, 1500 rpm, TEFC 3/50/380 motor.		
3 1	One Model M-100 Seed-O-Meter scale, complete with signal horn alarm and spare part kit.	
4 1	One Roskamp, 2 pair high, 9" dia. x 30" long double duty cracking rolls. All per special bulletin 10MP-480. Supplied differential drive and fluted rolls.	
<u>Including:</u>		
1--25 HP, 1500 RPM motor and starter.		
5 1	Bunting Permanent Magnet SP450 12" wide 2 pole, complete with hinge. All per catalog sheet 1122.	



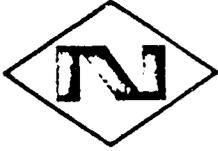
NEUMUNZ, INC.

GN-678

Sheet No. _____

PN- _____

No. of Machines	MACHINE DESCRIPTION	Total \$
<u>It. Qty</u>		
6	<p>3 high, 60" cooker conditioner with steam jacketed bottoms. Equipped with agitator, sweeps, gates, steam traps, thermometers and mounting legs.</p> <p><u>Including</u></p> <p>1--15 HP speed reducer. 1--15 HP motor and starter.</p>	
7	<p>1 One Roskamp 18" dia. x 36" single stand flaking mill, complete with hydraulic roll closure, including pump, corrugated roll feeder, agitator in hopper, 24" legs and v-belt drive. All per special bulletin LP-63-81.</p> <p><u>Including:</u></p> <p>1--50 HP, 1000 RPM motor and manual reduced starter.</p>	
8	<p>1 Lot of valves and special fittings for cooker conditioner.</p>	
9	<p>1 One panelboard, circuit breaker and switches.</p>	
	<p>TOTAL GROSS WEIGHT SECTION A -----24,070 lbs.</p> <p>TOTAL GROSS VOLUME SECTION A -----816.5 cu. ft.</p>	
	<p>PRICE; U.S. PORTS OF EXIT - SECTION A PACKED FOR CONTAINER SHIPMENT, WHERE PRACTICAL. OVERSIZE ITEMS TO BE SKID MOUNTED.</p>	\$108,802



NEUMUNZ, INC.

Sheet No. _____

PN- GN-678 _____

No. of Machines	MACHINE DESCRIPTION	Total \$
<u>It. Qty</u>		
	<u>SECTION B - SOLVENT EXTRACTION EQUIPMENT</u>	
1	Inclined Bulk Flow Feed Conveyor 110' long, final elevation 25 feet.	
	<u>Including:</u>	
	5--HP, explosive proof motor and starter.	
1B	Level indicator for intake hopper.	
1C	Slurry conveyor feeder.	
	<u>Including:</u>	
	1/2--HP motor, and starter.	
2	1 One 8' diameter rotary extractor with 12 compartments.	
	Complete with:	
	Slow speed drive mechanism, miscella screens and pans, discharge dump hopper, complete with sight glass.	
	<u>Including:</u>	
	<u>1--HP gearhead motor and explosion proof starter.</u>	
<u>3</u>	<u>1</u> One lot of miscella circulating pumps (3) centrifugal type all iron construction.	
	<u>Including:</u>	
	Each 2 HP, 3000 RPM explosion proof motor and starter.	
4& 4A	1 One solvent heater approximately 10' long x 4" diameter with stainless steel tubing and necessary temperature control valve.	



NEUMUNZ, INC.

Sheet No. _____

PN— GN-678 _____

No. of Machines	MACHINE DESCRIPTION	Total \$
5 1	<p>Desolventizer toaster 3 high 60" jacketed bottoms, including top extension section, all constructed vapor type, with automatic level control, including supporting legs and speed reducer.</p> <p><u>Including</u></p> <p>25 HP explosion proof motor and manually reduced starter.</p>	
5A	<p>Combination meal cooler and conveyor to include fan, and cycle collector and rotary discharge valve. (Customer to furnish duct work and cyclone collector based on drawings Neumunz will supply. Maximum distance 150 feet).</p>	
5B	<p>Vapor scrubber with solvent and vapor duct line to be supplied by client based on drawings Neumunz will supply.</p>	
6& 6A	<p>Miscella work tank. Capacity 1000 gallons. Approximately 5' diameter carbon steel construction with legs, manholes and necessary flanges, couplings and sight glass.</p>	
6B 1	<p>One miscella discharge pump, all iron construction with flowmeter.</p> <p><u>Including</u></p> <p>1--2 HP explosion proof motor and starter, 3000 RPM motor and starter.</p>	
7 1	<p>One miscella pre-heater 8" diameter x 42" length with stainless steel tubes.</p>	
8 1	<p>One evaporator 16" diameter x 14' long, including stainless steel tubes and necessary vacuum seal gauge glass level control valve and temperature recorder.</p>	
9 1	<p>One evaporator condenser, approximately 24" x 15' long with stainless steel tubes.</p>	
10	<p>Solvent water separator tank. Capacity 5000 gallon tank; 10' diameter x 8' straight side. All steel construction liquid and vapor type, including sight glass and necessary valving.</p>	



NEUMUNZ, INC.

Sheet No. _____

PN— GN-678 _____

No. of Machines	MACHINE DESCRIPTION	Total \$
<u>It. Qty</u>		
10A	Solvent water recirculating pump. All iron construction, including 1 HP, 3000 RPM explosion proof motor and starter.	
10B 1	One solvent make-up pump, all iron construction. <u>Including:</u> 1--HP, 3000 RPM explosion proof motor and starter.	
10C& 10D	Solvent make-up pump, self-priming centrifugal unit all iron construction. <u>Including:</u> 1500 RPM explosion proof motor and starter, with flowmeter.	
11 1	One vent condensor 10-3/4" outside diameter, 8' overall, with stainless steel tubes.	
12	Waste water evaporator tank, approximately 4' diameter x 4'3" straight side, all iron construction. Complete with sight glass manholes and necessary steam ejector.	
13 1	One final hexane stripper, approximately 12" diameter x 22' long, disc and donut design.	
13A 1 13B 13C	One finished oil pump, positive displacement pump. All iron construction supplied with oil level controller and flowmeter. <u>Including:</u> 2--HP, 1000 RPM explosion proof motor and starter.	
14	Hexane vapor condensor 10-3/4" diameter x approximately 48" long with stainless steel tubing.	
14A	Vacuum condensor pump. Turbine type, all iron construction. <u>Including:</u> 3--HP, 1500 RPM explosion proof motor and starter.	
15	Steam pressure regulating valve.	



NEUMUNZ, INC.

Sheet No. _____

PN- GN-678

No. of Machines	MACHINE DESCRIPTION	Total \$
<u>It. Qty</u>		
16 1	One cooling tower, to be supplied by client.	
16A 1	One cooling water circulating pump. Centrifugal type. All iron construction, complete with: 40 HP, 3000 RPM explosion proof motor and starter.	
16B	Collecting tank or funnel to be made locally.	
17	Safety water tank, 2000 gallon capacity to be made locally. Drawings Neumunz will supply.	
17A 17B	Water level controller and low level alarm for safety water tank.	
18 1	One lot of instruments, recording and indicating for temperature pressures, etc., including panelboard.	
19 1	One lot of valves, special fittings, etc., (All piping, elbows, standard fittings, to be furnished locally).	
20 1	One lot of electrical equipment, including control panel having explosion proof pushbutton signal lights, but with general purpose starters with circuit breakers to be located in a non-hazardous area. Also included explosion proof building lights. (Customer to supply conduit, wire and fittings).	
21 1	One lot of safety tools, including (2) portable hexane detection units.	
22 1	One lot of engineering drawings, to include: A. Process flow, including material balance sheet. B. General layout, including elevation and isometric piping drawing. C. Schematic electrical drawing. D. Installation and operating instructions.	



NEUMUNZ, INC.

Sheet No. _____

PN-- _____ GN-678

No. of Machines	MACHINE DESCRIPTION	Total \$
	<p>TOTAL GROSS WEIGHT - SECTION B 60,100 LBS.</p> <p>TOTAL GROSS VOLUME - SECTION B 3,837 CU. FT.</p> <p>PRICE; U.S. PORTS OF EXIT - SECTION B-----</p> <p>Packed for container shipment, where practical. Oversize items to be skid mounted.</p>	<p>\$392,678</p>



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No. of Machines	MACHINE DESCRIPTION	Total \$
It. Qty	<u>SECTION C - BAGGING AND CONVEYING SYSTEM</u>	
1	Eureka OK Bagging Scale Model A with over and under dial indicator, 12" diameter bag bell, suitable for 200 lbs., cotton or Burlap bags, including automatic cut-off and adapter for bin. All per catalog # 700.	
2	<p>One lot of bucket elevator and horizontal conveyors for complete plant (less inclined bulk flow feed conveyor supplied under Section B).</p> <p><u>Including:</u></p> <p>HP Motors and Starters</p> <p>GROSS WEIGHT - SECTION C 13,000 LBS. GROSS VOLUME - SECTION C . 410 CU. FT.</p> <p>PRICE: U.S. PORTS OF EXT - SECTION C -----</p> <p>Packed for container shipment, where practical. Oversize items to be skid mounted.</p> <p>TOTAL PRICE: U.S. PORT OF EXIT, SECTIONS A, B AND C -----</p>	<p>\$54,200</p> <p>\$554,680</p>
	<p><u>PERFORMANCE GUARANTEES</u></p> <p>When processing properly tempered U.S. #2 grade yellow soybeans or better containing 9-1/2 - 10% moisture, the plant will:</p> <p>a) Have a capacity of not less than 50 metric tons per 24 hour day.</p> <p>b) Produce extracted uncasted desolventized flakes with a residual oil content not to exceed 1.00% by weight, in accordance with A.O.C.S. standard methods of analysis.</p> <p>c) Have a solvent loss of not more than 0.5% of flakes by weight delivered to the extractor.</p> <p>d) Produce crude oil with not more than 0.2% by weight moisture and to have a closed cup flash point of not less than 300 Degrees F.</p> <p><u>UTILITY REQUIREMENTS</u></p> <p>a) Steam: 850 pounds per ton of beans at 150 tons psig.</p> <p>b) Cooling Water: 3000 gallons per ton of flakes. Extractor at 85 Degrees F.</p> <p>c) Power: 250 H.P.</p>	

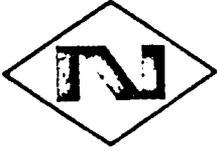


NEUMUNZ, INC.

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No. of Machines	MACHINE DESCRIPTION	Total \$
	<p><u>DELIVERY:</u> Starting in four (4) complete in seven (7) months from date of receipt of firm order.</p> <p><u>TERMS</u> Twenty percent (20%) downpayment with order. Balance to be covered by an Irrevocable Letter of Credit, confirmed on a U.S. bank, valid for eight (8) months and permitting partial shipments.</p> <p><u>VALIDITY:</u> This offer is valid for acceptance on or before October 1, 1985. Thereafter, it is subject to review.</p> <p><u>SPECIAL NOTE</u> Neumunz, Inc. reserves the right to supply vessels, heat exchangers, etc. from foreign sources. Value not to exceed 30% of the contract.</p> <p><u>NOTES:</u> Orders are not subject to cancellation without our consent but there may be delays in shipment due to circumstances beyond our control.</p> <p>Shipping expenses, when shown, are estimated. Actual charges will be invoiced at time of shipment.</p> <p style="text-align: right;"><i>[Handwritten Signature]</i></p>	



NEUMUNZ, INC.

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No. of Machines	MACHINE DESCRIPTION	Total \$
	<u>EXCLUSIONS</u>	
	<p>Unless specifically noted within the text of this Proposal, the following items are not included for Neumunz supply:</p> <p>Oil storage tanks (oil, fuel and water)</p> <p>Water cooling towers and pumps</p> <p>Steam boiler and water treatment plant, air compressors</p> <p>Electrical transformer, main switch gear and circuit breakers.</p> <p>Fire protection</p> <p>Building and structural supports</p> <p>Insulation material</p> <p>Laboratory equipment</p> <p>Maintenance tools</p> <p>Servicemen or erectors</p> <p>Straight pipe - common pipe fittings</p> <p>Electrical wiring, cables, lights and fixtures</p>	



NEUMUNZ, INC.

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No. of Machines	MACHINE DESCRIPTION	Total \$
	<p style="text-align: center;"><u>ENGINEERING SERVICES</u></p> <p>Included in this Proposal are the following Engineering Services:</p> <p><u>Drawings and Instructions in Duplicate:</u></p> <ul style="list-style-type: none"> A - Detailed process flow sheets showing schematic arrangement of machinery, equipment, pipelines and instrumentation, as well as process conditions and utility requirements. B - Certified dimension prints and instruction for all auxiliary items not of our design. C - Installation drawings locating equipment in accordance with our suggested layout approved by purchaser. D - Schematic pipeline drawings and legends for installation of piping materials supplied. E - Operating Instructions. <p><u>Start-up-Services</u></p> <p>Upon request, under a separate contract, we can supply a competent engineer to check completed installation and assist in start-up of the equipment at a salary charge of \$300.00 per day; client to provide travel and all local living expenses.</p>	

PC 2x



CABLE ADDRESS: FRENCH PIQUA
TELEX NO. 288-009

PHONE-613-773-3220

THE FRENCH OIL MILL MACHINERY CO. PIQUA, OHIO 45353

June 5, 1985

Dr. Thomas H. Applewhite,
801 Waukegan Road,
Glenview, Illinois 60625

Dear Dr. Applewhite;

In response to your conversation with our Daniel P. French at the AOCS meeting in Philadelphia, Dan has asked me to forward information to you concerning the U. S. AID project in Somalia which you have been studying.

The full press equipment necessary to process 100 tons per 24 hour day of sesame to produce crude oil would be approximately 1.6 million dollars f. o. b. point of manufacture.

Since sesame has an oil content in excess of that which may be efficiently removed by direct extraction, a prepress solvent extraction plant would be necessary. To add the additional equipment necessary for solvent extraction, we suggest you add 0.5 million dollars to the above figure. *TOTAL = 2.1 MILLION (EQUIPMENT)*

Please note that these estimates do not include receiving and storage equipment, utilities, office buildings, laboratory, etc.

It is beyond our scope to estimate the installation costs in Somalia, however in the United States, were a plant of this size to be installed, we would estimate that the installation costs would be equivalent to the cost of the equipment. *TOTAL = 2.2 MILLION (INSTALLED)*

We thank you very much for the opportunity to provide information on this project, and once your project has been refined, we hope you will be in contact with us again.

Sincerely,

THE FRENCH OIL MILL MACHINERY CO.

L. W. Shoemaker
L. W. Shoemaker, Sales Engineer,
Process Machinery Division

nsr

