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(R) EVALUATION SURVEY OF THE VEGETABLE OIL INDUSTRY[1]

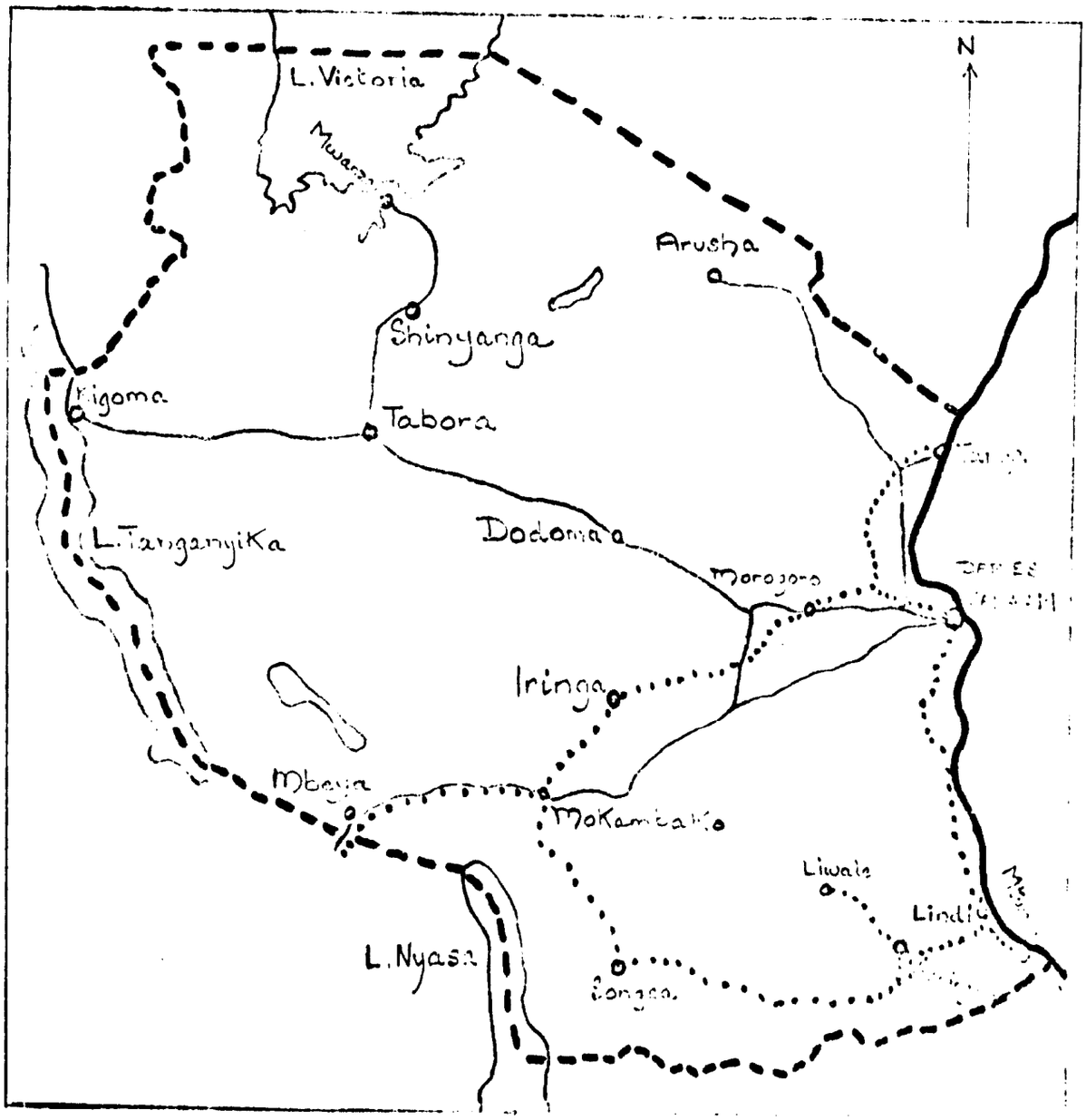
TANZANIA.

UF/INT/78/052.

Terminal report prepared for the
Government of Tanzania

by
H. B. W. Patterson

[1] The views expressed in this paper are those of the author and do not necessarily reflect the views of the Secretariat of UNIDO. This document has been reproduced without formal editing.


L.Victoria
Mwanza
Arusha
Shinyanga
Kigoma
Tabora
L.Tanganyika
Dodoma
Morogoro
Iringa
Mbeya
Mokambako
Liwale
L.Nyasa
Songea
N
Railway
Road
200Km

TANZANIA

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Conversion Factors

The metric system has replaced the British system of Imperial weights and measures.

Weight

1 metric tonne (here abreviated to mt) = 1000 kg = 2204.62 pounds

Length

1 Km = 0.62 miles; 1 mile = 1.61 Km

Area

1 sq. Km = 100 Hectars (ha) = 247 Acres

Currency (February 1979)

100 Tanzanian shillings (Tsh) = US$ 12 = £ 6

US$ 1 = Tsh. 8.30

Summary

Tanzania is a fertile country richly endowed with the physical conditions necessary for the successful cultivation of the coconut, cotton, groundnut, sesame, sun-flower and castor. Maize is the staple crop cultivated widely throughout the country; rice is also grown in large amounts. Since the early seventies the oilseeds position has declined, in some instances, as the report shows very markedly. The production of coconuts from increasingly senile coconut palms shrinks each year, a greater proportion are eaten fresh and there is for many producers no incentive to produce copra. Although there has been some decline in cotton production, important amounts are produced, fibre and cake being exported and oil consumed at home.

Many thousands of tons of groundnuts are grown but they are eaten direct and by 1977, only a few hundred tons were brought to market. A very modest upward movement in groundnuts marketed took place in 1978 under the influence of a slightly improved producer price. All of this has meant that whereas sunflower and sesame brought to market have declined only slowly, the seeds have had to be diverted to home crushing to keep the mills employed and to bolster up national supplies of edible oil which are low and in much demand. Castor bean production has fallen to a quarter of what it was only seven years ago.

It would seem many producers concentrate on subsistence cultivation of oilseeds and at least where the opportunity offers, they will then earn money by working to produce cash crops such as coffee, tea, cotton, cashews etc.

In these circumstances only about a third of the installed oil mill capacity is being used.

The areas served by railway are indicated on the map. It is understood almost half of the systems' locomotives (of various nationalities) are in workshops. It would help the whole industrial situation if most of these could be put back into service and kept there by the necessary maintenance and provision of spares. All weather roads are limited. The report stresses the necessity to site all factories including oil mills, solvent plants and refineries so that they are readily accessible, even in the wet seasons. Failure to do this compounds existing difficulties of other kinds.

Where large scale state farming of oilseeds is proposed there is a sound argument for having a solvent extraction plant in the neighbourhood of the crops, but again it must be readily accessible. It must be appreciated that oilseed cake if delayed by transport over long distances will deteriorate in quality due to oxidation of its oil content which will be encouraged by storage in hot humid conditions.

It is evident that increases in the amount of oilseed crops made available to the home market must precede any general industrial effort by the vegetable oil industry. No bulk tank storage for edible oil exists at any of the ports including Dar-es-Salaam nor does the railway have rail tankers designed for handling vegetable oils; drums are employed. If palm oil came to be imported in larger amounts, the case for bulk handling would grow stronger. It is already known that the price obtained for one ton of sesame oil or one ton of sunflower oil would currently purchase 3 and 2.5 tons respectively of Malayan palm oil. Detailed expert investigation of the possibility of cultivating the oil palm in the Kigoma area of Lake Tanganyika have shown the area to be unsuitable on several counts. Serious plans for the rehabilitation of the coastal coconut plantations are now very probably to be implemented.

Recommendations

1. Repair/replacement of present equipment allied with adoption of improved techniques, which may sometimes be as simple as the introduction of seed cleaning equipment prior to crushing, should be applied to existing mills and take precedence over the construction of new oilseeds factories except where these are planned to be in an area not already conveniently served by existing plants and which has been demonstrated to be suitable for oilseeds crops of chosen varieties.

2. No oilseeds processing units should be sited where the necessary infrastructure of communications, power and water are not being made at least concurrently with the building of the unit. The proposed plant at Nachingwea whose construction has made slow progress in the last three years should be re-examined from this standpoint before more money is spent on it.

3. A study should be made and a provisional plan drawn up for the reception of vegetable oil in bulk at Dar-es-Salaam and its movement in bulk by rail to any points which could be prepared for modest sized bulk movements say 50 tons. In times of better national oil production these facilities could play a part in the export as well as import trade.

4. Bottling of by-product hydrogen arising from electrolysis of brine and its transportation should be costed and compared with the cost of on-site generation by hydrogen users such as vegetable ghee manufacturers. The scale of the operations should quickly determine how economic the proposal would be.

5. Rolling stock maintenance should be improved so as to reduce operating delays on the railway.

6. Brief courses on the technology of oil milling and refining of about three weeks' duration should be instituted for the benefit of mill managers and their managerial assistants. Instruction should pay special attention, to feasible standards of technical efficiency in Tanzanian mills and refineries and the procedures for checking these so as to avoid waste. Public and private sectors should co-operate in this.

1. Introduction

1.1 Purpose of the mission

The purpose of this UNIDO mission (31 January 1979 to 26 February 1979) was to evaluate the present state of the vegetable oil industry in Tanzania, to identify improvements in the existing operations and in particular to assess whether by-products from its own processes, or those of associated industries, were being exploited to the greatest advantage. Current plans for the future expansion of the vegetable oil industry, including exports as well as the domestic market, were to be related to the necessary infrastructure, both in human and physical resources. Sincere thanks are here accorded to those in the Government service and other individuals who made their knowledge and time available to the mission. A list of contacts is at Appendix I.

1.2 Situation in Tanzania

Tanzania is now in the third year of its third five year plan (1976 - 1981). Since independance in 1961 the Government has sought to develop subsistence agriculture in its organization, its quality and its size because of its immediate impact on the standard of living of all Tanzanians and especially the ninety per cent directly engaged in cultivation of one sort or another. Simultaneously the cash crops, notably cotton, coffee, tea, tobacco, which were developed under colonial administration as a source of revenue, are still recognized as such and Tanzania looks to their improvement as a principal means of gaining the foreign exchange which will finance domestic advance.

Whereas these cash crops have been raised in an organized fashion, normally on estates served by communications constructed long ago for the purpose, the subsistence crops had been cultivated inevitably by haphazard and even wasteful procedures which the Government is trying to overcome. Briefly, the system of cultivating a strip of land conveniently adjacent to a means of communication, then moving on to another when the first is becoming exhausted, is being abandoned at the direction of the Government. Some fourteen million or ninety per cent of the rural population have been "villagized" to community settlements (Ujamaa villages) which by their design make it easier to provide both essential social amenities and agricultural extension services. The burden of cost for this reorganization is considerable and has to be borne by those who are being reorganized. Repeated efforts to minimize the cost of bureaucratic control have been necessary - and are continuing - so as to put as much wealth as possible into the hands of the producers in return for their efforts. It is anomalous that in a country where the climate ranges from an extensive tropical sub-humid coastal belt to wide semi-arid uplands and where several oilseed crops flourish that there should be any scarcity of vegetable oils. The population is greatest in the area of highest rainfall but it is in the drier cooler uplands that most of the cattle are kept.

1.3 Tanzanian intensions

Self-sufficiency in vegetable oils and for that matter dairy fats, is a legitimate and eminently achievable aim of Tanzania. Further, oilseed crops should in the future, as they have in the past, contribute an important part in the export trade. To this end, the central feature of the development programme is the concept of Ujamaa. The [illegible]

agriculture which becomes possible in a settled properly informed community is intended to spread beyond the bounds of the initial settlements and to affect the whole countryside. State farms will continue and apart from their own produce are intended to act as centres for the training of the agricultural extension service personnel and to act as models - when they become good enough - for the surrounding farming community. A limited number of farms are being created to produce oilseeds to feed two neighbourhood solvent extraction plants, thus combining a good crop yield with the best oil extraction yield possible. Putting the extraction facility right in beside the crop has not only succeeded in other developing countries, but has been the policy of multi-national private enterprise for a long time. If, however, the necessary communications, services and competent managers are not made available to the factory, and/or the area chosen for the crop is unsuitable, failure is guaranteed for public or private sector alike.

2. Vegetable oil crops

Full statistical data is not directly available on all oilseed crops. It is possible to make useful estimates by inference from data which does exist and a knowledge of local conditions and habits. This is particularly the case for the subsistence crops where the amount eaten and not brought to market can only be estimated. Each oil is taken in turn and the most complete and reliable account possible from information made available to the mission is given.

2.1 Coconuts and coconut oil

Much of the coastal plan and the islands of Pemba, Zanzibar (18 and 35 miles respectively off shore and North of Dar-es-Salaam) and Mafia (10 miles off shore South South East from Dar-es-Salaam) are suited to cultivation of coconuts. Unselected seed-nuts take 12 years to yield nuts, hybirds 5 or 6; at fifty years palms approach senility and this is the case with 75 to 80 per cent in Tanzania (1). Out of an assumed mainland area devoted to coconuts of 90,000 ha., 80,000 ha may be taken as bearing; at 72 producing palms out of 90 in a hectar, each giving only 24 nuts per annum, the average annual yield becomes 1720 nuts

per hectar or ca. 138 million in all. At average levels of consumption some 85 m (62 %) are eaten fresh. This leaves 53 m for sale inland and for the production of copra (equivalent to ca. 7.000 mt if all were in fact converted to copra). In general little replanting is done (about 6 % of available area) and it is difficult to persuade owners to replace senile trees as long as they give a few nuts. A particular exception is Mafia Coconuts Ltd. where replanting is practised; 45 nuts per palm and 92 palms/ha are normal giving 670 kg copra/ha with a target of 1800 kg/ha with still better husbandry in future. As the number of coconuts declines, fewer remain for conversion to copra. Pests and drought have also played a part. The distribution of copra crushing mills is given in Chapter 8.

A situation is foreseen where copra will disappear and coconuts will be sold to be eaten fresh at a high price. The Marketing Development Bureau of the Ministry of Agriculture in their 1976 review (1) propose that a Coconut Development Authority be set up by Government to arrest the decline. In March 1978 a pre-feasibility study by experts from the Federal Republic of Germany recommended the establishment of a National Coconut Development Project to identify and eliminate coconut palm pests and desease, to examine the possibilities of providing improved seed for new plantations, to establish better production methods and to formulate a development strategy for the industry. Duration would be three years at a cost of DM 8 million (4). The World Bank (5) in May 1978 were recommended to support the German bilateral aid by establishing a pilot scheme for the production of high yields palms based originally on Mafia island.

Only when such projects approach maturity will there be a need to consider new mills for crushing/extracting oil from copra. The earliest requirement would be a programme to maintain or replace worn out equipment in some existing mills which are otherwise well situated.

2.2 Groundnuts and groundnut oil (2)

Cultivation is widespread both in the coastal belt and scattered throughout the uplands. The regions around Mtwara and Dodoma account for 85 per cent of purchases by the Government Agency (Table 3.3). Tabora and [illegible] featured in the large "Groundnut Scheme" which failed before independance. These areas are now mainly devoted to tobacco and cashew nuts respectively. Groundnut [illegible] cultivation

around Lindi (see map). The "average improved farmer" is credited with an out put of 700 kg/ha and the Ministry of Agriculture also estimate that of the 150,000 ha possibly devoted to oilseeds, 100,000 ha relate to groundnuts. This would imply 70,000 tons of nuts/annum.at the "improved farmer" rate, or say 35,000 tons at the common low yield. Comparison of this size of production with regional purchases of groundnuts through recent years is revealing.

Government agency purchases	(tons)
1971/72	(3295)
1972/73	3454
1973/74	1362
1974/75	509
1975/76	510
1976/77	417
1977/78[1]	1448

[1] up to April 1978.

Evidently growth for local subsistence is the motivation for this crop. Nevertheless the increase in price paid to the producers during 1977, from Tsh 2.50/kg to Tsh 4.00/kg, had some effect in bringing nuts onto the market, (see Chapter 6). It is said by Ministry of Agriculture Officers that although a great many of the rural population grow groundnuts as one of the regular items of their diet, they may turn to work on a cash crop such as tobacco or cotton to earn cash for themselves rather than growing more groundnuts. This appears quite possible if they estimate the cash crop (coffee, tobacco, cotton etc.) is likely to bring them more money. Bad weather in 1974 to 1976 also depressed all crops and not only groundnuts. Research is being conducted at present to find varieties capable of giving a high yield in Tanzanian conditions. It is obvious, therefore, in Tanzania, as elsewhere, although the potential for groundnuts is indeed very large, only a derisory portion will be sold for crushing unless the price is competitive with other crops. The detailed comparison of Producer Prices for the Main Scheduled Crops is given at Appendix 2.

The mills equipped for the extraction of groundnut and other vegetable oils are shown in Chapter 8.

2.3 Sunflower and sunflower oil

Sunflower cultivation is widespread throughout the uplands plateau, the important areas being around Morogoro, Shinyanga, Iringa and Dodoma. The area under sunflower is estimated to be 15,000 ha (2) and yields ca 400 kg/ha by traditional methods but 800 kg/ha by improved methods on the part of the small holder who can thereby double the return for his labour. Mechanised farms give 1200 kg/ha of the high oil variety; at the moment inputs to these establishments are subsidised. The 1977 FAO/Bankers study noted that a ton of sesame oil was the equivalent in price to three tons of imports Malaysian palmoil and a ton of sunflower oil equivalent in price to 2.5 tons. With sunflower, research is also continuing to identify the varieties which do best in various parts of Tanzania. Another report (6) indicates some decline in the sunflower seed position as follows.

	1969-71	1975	1976	1977
Area ('000 ha)	30	28	25	25
Yield (kg/ha)	426	321	237	280
Production ('000 mt)	13	9	6	7

The regional purchases in the case of this seed appear to be equated with production by the Ministry of Agriculture (2) and are shown here (metric tons) in total along with exports.

	1971	1972	1973	1974	1975	1976	1977	1978[1]
Gapex Purchase	(8771)	(6530)	9464	6352	7031	6894	5912	7126
Export	5385	8102	8785	2751	3314	355	100	

A price differential has been established for two varieties because of their superior oil content so as to supply extraction plant at Morogoro which will require this sunflower seed to make it economic. Producer prices now range from Tsh/mt 1300 (mixed variety) to Tsh 1700/mt (high oil content). After cottonseed oil, sunflower oil is readily acceptable. It appears not to be refined in most cases and if stored badly, naturally goes rancid which is not the fault of the oil but of those responsible for handling.

2.4 Sesame seed and sesame oil (Simsim)

Sesame grows both in the coastal plain (Mtwara, Lindi) and in the cooler uplands (Morogoro). Cultivated on 25,000 ha, an average yield is 250 kg/ha, but with the better seed varieties and care in weeding

[1] up to April 1978.

etc. this is increased to 600 kg/ha, with a corresponding doubling of the return to the farmer. For mechanised large scale production an FAO/IBRD mission anticipate a yield of 800 kg/ha (2). Sesame seed is also the subject of research to discover high oil yielding varieties.

Equating Gapex purchases with production we have the following record.

(metric tons)	1971	1972	1973	1974	1975	1976	1977	1978[1/]
Gapex purchases	-	(7694)	7335	6641	5820	5891	5941	6572
Exports	631	9609	5228	3264	3388	708	300	

The export of seed has declined in order to feed local mills and use more of the oil at home. The Ministry of Agriculture 1979-1980 Price Review suggest the areas around thenew solvent extraction plants should concentrate on keeping both plants (Nashingwea and Morogoro) supplied, whilst it could be left to the "Coast" (Dar-es-Salaam and southwards) and Tanga to supply seed exports. Current producer price per ton of sesame seed runs at Tsh 3,300 and export value over Tsh. 5,288.

2.5 Castor beans

These are grown entirely for export; there is no castor milling in Tanzania. The important growing areas are in the uplands and the Central Region dominates easily. A yield of 250 kg/ha is obtained from self-seeding plants (these merely being weeded and harvested) but improved effort, fertilizer etc. can raise this to 800 kg/ha. Gapex purchases and exports are given below (metric tons)

	1971	1972	1973	1974	1975	1976	1977	1978[1/]
Gapex purchases			10191	5619	3372	2194	1887	2197
Export	24685	9900	6488	3250	3000	1136	2600	

As the farmers in the Central Region have [illegible] on their Ujamaa villages it is hoped this will lead to [illegible] in castor bean production but such an outcome, if realised, is completely dependent upon producer price and hence export and world market price.

1/ Up to April 1978

3. By-product vegetable oil crops

3.1 Cottonseed - present situation

The Western Cotton Growing Area (WCGA) around Mwanza and Shinyanga contributes over 90 per cent of the national crop and the Eastern C.G.A. centred around Morogoro and Kilimanjaro the remainder. Virtually all is rain-fed and 34 per cent of seed cotton is lint. Applying this ratio to the production of seed cotton we have a national production of cotton seed from 1971 on as follows

Table 1

Year	Cottonseed produced ('000 mt)	Cottonseed crushed ('000 mt)	Nominal (16 % seed) crude oil produced ('000 mt)
1971	151	105	16.8
1972	127	89	14.2
1973	152	106	17
1974	129	90	14.4
1975	146	102	16.3
1976	83	58	9.3
1977	129	90	14.4
1978	ca. 90	63	9.5

From the production of cottonseed there is made an excessive deduction of about 30 per cent for seed and waste; - 15% would be ample (see Chapt. 6). The cotton is of the same general variety of medium staple; it is ginned thoroughly, not delinted, decorticated and crushed. No estimate of the percentage weight of linter remaining on seed after ginning was volunteered; it looked quite low, and it is on this undried material that oil determinations are made as being around 19 per cent. Two successive crushes are said (TCA) to yield an average of 16 per cent parts of the 19 per cent oil present.

The area devoted to cotton and the yield have declined viz:

Table 1-A (6)

Areas ('000 ha) devoted to seed cotton.

Year	1969-1971	1975	1976	1977
Area	425	233	374	374
yield (kg/ha)	497	583	552	472

3.2 Cottonseed - potential production

By 1980 it was hoped the 1977 tonnage would be increased by about 50 per cent to 200.000 tons and that a portion of this would be solvent extracted. Now, in February 1979, there appears to be insufficient time for this.

3.3 Other by-product oil crops

No maize oil is produced and as far as is known, there is only a plan by one private manufacturer to extract oil from 15.000 mt rice bran per year in a solvent plant yet to be built in Dar-es-Salaam (private sector); this oil will be for soap only (see 4.3 and 4.4).

4. Vegetable oil - potential production

4.1 Existing crops - groundnut, sunflower, sesame and coconut

Excluding coconut palms and cotton, the Ministry of Agriculture estimate that there are at present about 150,000 ha devoted to oil-seeds crops of which 100,000 ha for groundnut, 15,000 ha for sunflower 25,000 ha for sesame and 10,000 ha for castor are the likely proportions.

A major part of this area is probably still made up of small holdings, groundnuts especially being regarded as a subsistence crop for his own use by the farmer. From Chapter 2 it will be evident that what is called vertical development, or more intensive cultivation, will quickly open the way to doubling the yield and the cash return. As regards increased area of cultivation, this is possible for all crops mentioned, but the most obvious immediate advance is to be expected from the state farms which will feed the solvent extraction plants as already described. As soon as this is seen to work well the modest agro-industrial "complex" can be repeated with benefit of any lessons learned from the first experience.

It has already been said (section 2.1) that the 90,000 ha now nominally devoted to coconuts are very poorly maintained and here again rational intensifiedeffort is the first answer with the virtual certainty that the yield can thereby be quadrupled and further increased to ten fold as long term benefits of maintaining healthy groves begin to show themselves (5). The original German colonial effort [illegible]ved a situation wherein 15,000 mt copra become available as a year's yield. Less than 7,000mt/annum is the current prospect. It takes 6 nuts (ca. 1659 copra each) to produce 1 kg copra selling at Tsh 2.40 (to depex), whereas each nut can fetch Tsh. 1.0 in the village or Tsh 3.0 in Dar-es-Salaam market. It is little wonder the small holder takes advantage of the ready market for fresh nuts and it is left to the estates with their own facilities to produce and if desired mill the copra for oil e.g. Mafia Island.

4.2 Oil palm

The Kigoma area by Lake Tanganyika has been advanced as a possible area for the cultivation of the oil palm. One extensive review of soil, water, temperature and disease in the area (5) concludes, "There is by no means any possibility of envisaging any bankable oil palm project in the Kigoma area". The Kilombaro valley offers poor prospects (5).

4.3 Maize

This is the staple small holder crop in Tanzania cultivated throughout the country and consumed directly. Although the germ contains 50 to 56 per cent oil of which expellers can obtain 50 per cent parts there appears no point in milling to separate the germ when the corn is currently eaten whole. Latest crop (1977) marketed amounted to 124,000 mt., previously 185,500 mt was reached in 1971. The actual crop grown for subsistence purposes is several times larger, it is thought by agriculturists and maybe ten times as much as the figures quoted here.

4.4 Rice

Commercial paddy purchase by Gapex has declined steadily as shown below but the crop is evidently very widely used for subsistence.

Year	1971	1972	1973	1974	1975	1976	1977
Gapex purchase (mt)	93495	68585	73094	59702	23603	11694	16015

One manufacturer is on the point of installing solvent extraction and proposes to process 15.000 mt rice bran from NMC per year for soap making oil: he is aware there is currently no prospect of inactivating the enzyme at the rice mill.

4.5 Soya

This is still an experimental crop in Tanzania and FAO (6) estimate the position thus:

Table 2

Year	1969-71	1975	1976	1977
Area ('000 ha)	2	5	4	4
Yield (Kg/ha)	256	178	150	150
Production ('000 mt)	1	1	1	1

The current producer price is Tsh. 225/mt beans. Significant increase appears very improbable. The crop may provide a source of raw material for the experimental production of vegetable protein for human consumption.

5. Infrastructure

5.1 Communications

Early this century railways (see map) were constructed, striking inland from Tanga towards Arusha and from Dar-es-Salaam to Kigoma with the intention of serving estates along their routes; later the Tabora-Mwanza section was added and Dar-es-Salaam linked with Tanga. This network is 1 m gauge and contains rail of medium weight, 60 lbs/yard. Locomotives are nearly all German, Canadian, Indian or British diesel electric, although a few steamers remain. The Chinese completed the Zambia-Dar-es-Salaam railway via Mbeya in 1975; it is of slightly different gauge to the remainder. It is no coincidence that such important oil seed centres as Morogoro, Dodoma and Mwanza lie today on this rail system. Maintenance problems have brought about a situation where about half of the locomotives are in workshops. The several different national types of locomotives makes this problem worse. Expatriate maintenance engineers have to be called in and a much greater variety of spare parts has to be held in stock than would be the case in the railway workshops of more developed countries which for long have been able to standardize. This means that on stretches of line which require the help of a second engine because of the gradient (as approaching Mwanza area) if no such engine can be spared the train has to be broken and taken forward in sections, thus adding to delay. Although the 1223 km from Dar-es-Salaam to Mwanza are scheduled to be completed in 36 hours, freight trains normally require a week at least and some trains may take considerably longer. Mwanza is an important vegetable oil processing centre, being the only place for example to have an oil hydrogenation unit (Voil Ltd.). Freight rates from here to Dar-es-Salaam vary from Tsh 214 - 262/ton according to size of shipment; rates for exports over the same stretch are reduced to Tsh 198/ton.

The coastal plain is not well served by rail or road. There is a link between Dar-es-Salaam and the Tanga-Arusha line some miles inland

and the main road is further inland still (see map). There is an excellent hard surface road leading west from Mtwara for about 160 km but the 56 km connecting road to Nachingwea is dirt and in a poor state. This is no fit approach for the solvent extraction plant being built (slowly) at Nachingwea. The main road from Zambia is very good, with a hard weather surface which will require maintenance under heavy traffic conditions. The Zambia-Dar-es-Salaam rail could be used to lighten the burden of wear which the road is obliged to sustain. This road and this railway serve Morogoro, the site of the larger of the two proposed solvent extraction plants. The roads north from Mtwara and west Nachingwea are poor dirt class roads and certainly not all weather. It is significant that in order to service the rehabilitation of the coastal coconut plantations part of the proposed equipment of the Coconut Development Project is a schooner to facilitate the transportation of stores and seedling along the length of the coast at any time of year.

5.2 Oil handling

All oil is handled in drums there being no rail or road bulk tankers, nor at Dar-es-Salaam or elsewhere are there bulk edible oil store tanks at the port. At present when there is not enough vegetable oil to export and when imports have to be kept to the minimum of tallow and coconut (!) to satisfy the soap makers this lack of bulk storage is not as serious as it might become. For internal movement the Ministry of Industry and Transport should institute a study of oil movements, present and anticipated, to evaluate the advantages of obtaining even a few, say ten, 10 ton rail tankers. As against the time when palm oil or other moderately high melting point oil/fat might be handled it is important at the beginning to equip all mobile or fixed oil tanks with coils for steam or hot water circulation by means of which partly solidified oil may be rendered easily pumpable or able to settle its water content. The design of tank should include a small pump into which water will drain; also manholes must be sited to allow ready access when internal cleaning becomes necessary. A further point which if accepted may be the means of avoiding much future harassment is to consider how far the total storage capacity should be subdivided so that all incoming and outgoing movements of even the same kind of oil are not obliged to pass through the same tank. To take an elementary case, if two decided

that a 400 ton storage is adequate at Dar-se-Salaam for example, this might well be split as 2 x 200 tons store tanks. Oils from different supplies can then be segregated for undisturbed setting, independent sampling etc. This is a highly desirable situation. Seed and nuts appear to be handled and stored in sacks without exception. Although this is labour intensive it is not recommended at this stage that any alternative has a high priority.

6. The domestic market for oils, fats and associated products

Ghee can be obtained in stores (Tsh 150 - 170 for 3 kg tin) in Dar-es-Salaam and in up country (Mwanza) markets home packed at about Tsh 40/kg. Butter is available at Tsh 20 - 30/kg in Mwanza twice a week, but this is one of the best dairy areas. National controlled prices (see section 6.2 for explanation of "wholesale", "sub-wholesale" and "retail") for oils are:

	Tsh/kg	
Cottonseed oil (deodorised)	10.20	sub whole sale
Groundnut (refined only, - presumably means neutralised and washed but not deodorised)	19.19 20.73	whole sale retail
Sunflower (deodorised)	20.93	sub whole sale
Sesame (deodorised)	18.94	sub whole sale
Coconut (refined and deodorised)	13.41	sub whole sale
Vegetable ghee (vanaspati) (sold in packs 12 x 1 kg tins)	15.38	sub whole sale

For vegetable ghee (made by Voil, Mwanza) hydrogenated cottonseed, sunflower or sesame is used and if these are in short supply imported palm oil may also be used. So far, the latter has not needed to exceed 50 per cent, but this may have to be exceeded if other oils become even scarcer. This situation exists in other countries.

- N.B. Vegetable oils, other than cotton, are often consumed as unrefined merely filtered crude oil and will be cheaper on that account

It is difficult to say what the invisible fat consumption is overall, since in the cattle areas of the uplands some of the population (Masai) depend upon a relatively large proportion of meat in their diet, whereas

in the more densely populated coast areas the cattle have to be supplied by long treks apart from some train loads to areas like Dar-es-Salaam. It is against this background of animal fats that the total situation (visible and invisible fats) for vegetable oils is to be viewed.

It must also be remembered that groundnuts (ca. 73,000 mt/annum) are eaten as such and so would alone contribute approximately 32,850 mt invisible oil to the diet, i.e. almost 2 kg/cap/annum for 17.5 m people. These sell at Tsh 10/kg, so it is not to be expected that Capex will obtain much at their offer of Tsh 4/kg. Tsh 10/kg for nuts is equivalent to US$ 1250/ton. Currently (February 1979) crude groundnut oil cif Rotterdam is US$ 1090/ton. There is, therefore, a marked disincentive to process/export nuts or oil.

From ca. 80 m. coconuts eaten fresh in home cooking another 8000 tons oil adds a further 0.5 kg/cap/annum on average.

The World Bank (3) use the following estimate of the 1976/1977 edible oil domestic consumption.

Table 3

Oil ('000 mt)	Cottonseed	Coconut	Sunflower	Sesame	Other	Total
Marketed as oil	10.9	2.4	1.6[2]	2.1[2]		17.0
Home use as oil		(7.5)[1]	3.6	2.4	1.0[3]	7.0
Total	10.9	2.4	5.2	4.5	1.0	24.0

[1] Not added here since it is already counted (as 8,000 tons) immediately above;

[2] Very small exports have been deducted from the total marketed figure given in (3).

[3] Includes some palm kernel and possibly a little groundnut oil as such.

This 24,000 mt oil is equivalent to only another 1.5 kg/cap/annum, bringing what may best be described as the vegetable oil, visible plus invisible consumption, up to 4 kg/cap/annum. Soya bean and rice make no significant contribution to the vegetable oil consumption at present. The largest staple food crop is maize of which about one million mt may be raised each year. Assuming 2 per cent germ and 54 per cent oil in maize germ, this crop could contribute 10,000 mt oil/annum or 0.6 kg/cap/annum on average.

Whilst everyone would like to have more oils and fats available than are apparently consumed at present, the great majority of those who are in a position to produce more oilseeds crops concentrate on their own needs and direct private sale of any extra. In this situation the FAO/Investment Bank sees the possibility of an improvement on three counts (5) currently already included in development plans:

(a) Taking a present base year of 95,000 mt cotton seed this at an inefficient 12.5 per cent parts extraction gives 10,800 mt oil. Taking (for the moment) a conservative increase in cotton seed in 1985 to 120,000 mt, this at the same 12.5 per cent extraction gives 15,000 mt, or a gain of 4,200 mt. However, this 120,000 mt cottonseed need not be so low if the excessive retention of seed for planting is reduced as suggested in (d) below.

(b) 2,300 mt/annum minimum increase in sunflower oil due to increased small holder cultivation;

(c) 4,500 mt/annum additional sunflower and other vegetable oils from the Morogoro solvent extraction plant and its attendant oil seed farms by 1985. Further to these increases the Bank report envisages the following three as being possible.

(d) There is a current retention of some 42,000 mt seed for planting next year's harvest. This is 15 - 20,000 mt too much and represents a waste which if unchecked by 1985 would reach 25,000 mt. If this waste is avoided and processed instead in a solvent plant (17.5 % parts cotton seed oil recovered) this waste, itself, yields 4375 mt additional oil which would otherwise be completely lost. Even if only 15,000 mt are saved from being wasted, these at 17,5 % extraction give 2625 mt additional oil.

(e) Additional large mechanised farms equivalent to an estimated output of 3800 mt oil (soya bean 700 mt, sunflower 1260 mt and sesame 1920 mt).

(f) Apart from the waste described in (d) above, there would be the expected normal crop of cottonseed of some 135,000 mt (after deducting seed for planting and some waste), which if solvent extracted instead of pressing as at present, would yield an estimated 6750 mt cottonseed oil. To this would be added [illegible] oil arising from the remainder of the plan's programme (copra-if any - and other seeds).

With some minor adjustments of the above projections the following potential increases are then seen for 1985:

Cottonseed oil 13,200 mt; Sunflower oil 5,800 mt; sesame oil 2,700 mt; groundnut oil 1,000 mt; soyabean oil 700 mt; Morogoro production and solvent extraction of other than cotton seed, 3,300 mt; total = 26,700 mt.

If to this is added the 8,000 mt coconut oil derived from fresh coconuts mentioned just prior to Table 1, plus the 24,000 mt shown in Table 1, there is a grand total for 1985 of 58,700 mt. No firm evidence was discovered that any determined start had been made as yet towards the achievement of this goal.

6.1 Oil cake

100 tons cottonseed when decorticated loose 30 per cent hulls giving 70 tons meat, which is then twice crushed to yield a cake of 6 - 7 per cent oil, amounting in weight to some 46 % of the original seed i.e. 46 tons. The domestic consumption of cotton cake by animals is under 2000 tons/annum; the bulk is exported (TCA). Animal feeds produced in Tanzania are recorded as follows by the NMC.(metric tons).

Table 4

Type	1970	1971	1972	1973	1974	1975	1976	1977
Complete meal				10547	13639	20887	18051	17288
Specialised (poultry etc.) feed				9316	17654	18247	17741	19162
and imported - (all types)	236	1982	1181	1840	2337	2566	1625	-

The average ex-factory price for cotton cake is Tsh 990/mt and FOB Dar-es-Salaam, Tsh 1190/mt.

6.2 Soap

Sopa prices are controlled; there is a lively demand which soap-makers find difficult to meet because of the need to import raw materials; low level of income and difficult distribution problems restrict the growth of soap demand away from the towns. Laundry soap and washing powders total about 32,000 mt (1977) or just under 2 kg/cap/annum. Controlled prices are, laundry Tsh 8/kg, toilet Tsh. 15.50 - 16.60/kg, washing powder Tsh 12,58/kg, liquid detergent Tsh 5.67/lit., all at what are classed as "sub-whole sale" rates. Like edible oils there is

presumably an arrangement whereby to the ex-factory price 4 per cent is added to give "whole sale"; to this price 3 % of itself is added to give "sub-whole sale"; to the sub-whole sale 5 % is added to give retail. Until standards are legally implemented there does not appear to be any defined minimum total fatty matter content etc. Several specimens of soap were examined and some used: they appeared to be of quite reasonable quality, but were perhaps near the top of their class.

6.3 Conclusion

In oils and fats there is a sellers market for domestic consumption with controlled prices operating, but as has been pointed out for commodities such as coconuts and groundnuts, producers can mostly sell these in the production areas.

7. Export of vegetable oil industry products to the international hard currency market and elsewhere

It will already be evident from chapters 2 and 3 that the amount of oilseeds being exported has declined sharply as they are needed to keep the home mills employed and to provide cooking oil and some vegetable ghee for the population.

7.1 Coconut

No oil is being exported and the coconut cake exported in 1977 amounted to 2318 mt. In some years just previous to 1977 the export of cake had been nil, whilst copra export had been around 2,000 mt. Corresponding with the export of cake the export of copra fell to 322 mt. No short term improvement is foreseeable; the higher yielding dwarf coconut palms which it is planned to plant must first mature (3 - 5 years).

7.2 Cotton

This has declined least and in 1977 34,434 tons of cottonseed cake were exported. The amount currently retained at home is less than 2000 mt.

7.3 Groundnuts, sesame, sunflower, soybean and castor

The following export tonnages have been abstracted and rounded off from the Tanzanian Ministry of Agriculture Price Policy Recommendations for 1979 - 1980 and September 1978.

Table 5

Export of Oilseeds 1971 - 1977 ('000 metric tons)

Year	Groundnut	Sesame	Sunflower	Soya bean	Castor
1971	(340)	6	5	(418)	25
1972	(75)	10	8	(380)	10
1973	(232)	5	9	(529)	6
1974	-	3	3	(49)	3
1975	-	3	3	(70)	3
1976	-	(708)	(355)	(0)	1
1977	-	(300)	(100)		3

N.B.: Figures in brackets are metric tons.

The cake arising from the local crushing of these seeds (excepting castor) is used in the preparation of animal feeds.

7.4 Other vegetable oil cake exported besides cocconut and cottonseed amounted to 1132 mt (1977). In the same year only 140 tons kapok seed and 40 tons miscellaneous seeds were exported.

7.5 Conclusion

Tanzania is not ignorant of the international conditions of the export trade having been engaged in it to an important extent for many years. At the present time the first priority is to produce oil for home use as quickly as possible so as to avoid importation. Tanzania, fortunately, produces sesame and sunflower also which command a much higher price on the international market than palm oil, hence as the Government is already aware, these could be sold and several times their tonnage of palm oil imported. To do this successfully a number of practical points must be appreciated and appropriate action taken in advance if the exchange is not to be robbed of some of its advantages. First, palm oil melts around 38°C, hence, as emphasized in Chapter 5, land tanks and rail tankers should be provided with some closed coil heating. Open steam splits some oil, increases free fatty acid and hence the refining loss increases. If a petroleum or mineral oil tank is put onto edible oil handling duties it must be cleaned well otherwise smears or spots of mineral oil or a dull colour are likely to appear in the finished edible product. The palm oil on arrival is likely to have an ffa (free fatty acid) of 4 per cent. When removing this with caustic soda solution in the conditions of Tanzanian refining plants another

six per cent of palm oil is likely to be drawn off in the soapstock and subsequent washes. Carefully supervised experienced batch refiners elsewhere may manage to keep this additional loss to 4 per cent but that cannot be relied upon at the outset. Hence a total of some 10 per cent of the imported palm will find its way to soapstock and it is important that this should be used for soap making. Any calculation on the introduction of palm oil to the Tanzanian programme must allow for these items otherwise an unrealistic evaluation is produced.

8. Present operational state of the vegetable oil industry and plans for its expansion

8.1 Coconut

The coconut industry has declined severely as regards the tonnage of copra being crushed since it is more attractive by far for the producer to sell his nuts fresh if he is at all near a populous area. The industry is served by its own mills which concentrate on copra crushing; there are only about two mills outside of the copra crushers who include a little coconut in their mixed programme. The distribution is, Tanga 3 (including the two largest with input capacities for copra of 6000 mt and 4.800 mt per annum respectively), Dar-es-Salaam 5, Bagamoyo 1, Lindi 1 and Mafia 1. Total installed capacity is 19,100 mt/annum, the average amount crushed in 1974 and 1975 being 6862 mt and the utilisation, therefore, 37 per cent. The estimated oil produced on average equalled 4317 mt. In fact during this period three mills were tolerably busy and the remainder grossly under employed. Including wide fluctuations the production of copra in Tanzania has declined from 15.000 mt (1969/1970) to 2,975 mt (1976/1977). The replanting of coconut palms now proposed (see sec. 2.1) can only begin to make itself felt in about five years from planting so there is no urgency to build new crushing capacity; repair/replacement of old presses is [illegible].

8.2 Cottonseed

The information shown below has been prepared from data given by the Tanzanian Cotton Authority in Dar-es-Salaam some of whose plants in the western area near Mwanza were visited.

Table 6

Crushing capacity of cotton seeds based on 25 working days a month, annual capacity based on ten working months a year

Crushing capacity - one expeller - 5 tons per 24 hours
Crushing capacity - one V.I.P expeller - 15 tons per 24 hours
Crushing capacity - one mark 3, - 15 tons per 24 hours

	Crushing capacity per day - in tons	Annual capacity in tons
I. a) Mwanza region (TC.A.) 6 mills Total 27 expellers and 2 VIP	165	41250
b) Mwanza region (VOIL) Total 20 expellers Mark 3	130	32500
2. Shinyanga region (TCA) - 5 mills Total expellers 55	275	68750
3. Mara region (Mara Industrial Co. Ltd.) 2 mills Total expellers 9	45	11250
4. West Lake region Chato 8	40	10000
5 a) Morogoro region (TCA) (Eastern) Kilosa 8	40	10000
b) Ifakara 2 (Ulanca Cotton Co. Ltd)	10	2500
6. Mbeya region 2 (Mbeya Industries Ltd.) (Eastern)	10	2500
7. Dar-es-Salaam (Eastern) Rajani Mills Ltd. Exp. 20	100	25000
Popular Oil Mills Ltd. Exp. 5	25	6250
8. Kilimanjaro region (Eastern) Pare Development Co. Ltd. 6	30	7500
Total crushing capacity metric tons:		217500

II Cotton seeds produced for crushing

1976/1977 Tons 84177
1977/1978 Tons 63211

III. Cottonseeds allocated to millers for crushing (Table 6 contd.)

		1976/77	1977/78
TCA	Mwanza	22236	17250
VOIL	Mwanza	11664	7053
TCA	Shinyanga	28699	21438
TCA	Morogoro	1500	2517
ULANCA	Cotton Co.	985	-
MICO MARA		10105	8870
B.C.C.	West Lake	6296	4820
Mbeya Industries	Mbeya	740	730
Pare Development Corp.		-	337
Rajani Mills Ltd.	Dar-es-Salaam	1000	103
Popular Oil Mills		952	93
		84177	63211

It is evident that the utilisation of installed (nominal) capacity has sunk to 29 per cent with some real prospects of this being doubled when the crop increases and less seed is wasted (Sect. 6). Additional crushing capacity is not needed. The plan to solvent extract some of the cotton seed cake on a plant being constructed is reasonable, especially as the oilseeds (sunflower and sesame) to process which it has been specially constructed (Morogoro) may not always be adequate. The cake must be extracted as promptly as possible since it will deteriorate due to oxidation if stored for many days in hot humid conditions.

8.3 Additional capacity

Above the mills mentioned it may be in order to add Home Industries of Tanzania Moshi with a capacity to produce 2,500 mt/annum cooking fat but last shown with a utilization of 54 per cent. It has already been mentioned that a Construzioni Meccaniche Bergamo oil mill/pre-press solvent extraction plant with input of 150 tons per day and its own refinery is to be operated at Morogoro. A mill with an input capacity of 9,000 mt/annum, pressing only, with its own refinery is recommended construction at Nachingwea. Access to the site from the all weather road is via about 35 miles dirt-road and is inadequate.

The varieties of sunflower, sesame and any other oilseed which it is intended to cultivate locally to provide this plant with work appear not to have been established, hence it cannot yet be known what their yield will be. It is ironic that this scheme should be repeating the same mistakes in the same area as some of those made by the British Overseas Food Corporation thirty years ago. Fortunately, progress is so slow that there is a good opportunity to review the scheme and to ensure money is not spent on creating a factory with a wholly inadequate infrastrucutre.

8.4 Soap

From a 1977 list of 25 soap factories some 9 appear moribund or not yet commissioned and the combined capacity of the latter equals - laundry soap 5430 mt/annum, toilet soap 1200 mt/annum and washing powder 880 mt/annum. These tonnages have, therefore, been removed from the list of soap making capacities obtained from the Ministry of Industry with the results below.

Table 7

Capacity and production of soaps in Tanzania ('000 mt)

	1977	1978 (projected)	1979 (projected)
Laundry: capacity	42040	42040	45040
Laundry: produced	29757	31995	37215
Utilization %	71	76	83
Toilet: capacity	8400	9400	9400
Toilet: produced	5236	6300	6740
Utilization %	62	67	72
Detergents: capacity	7050	14250	14250
Detergents: produced	1650	5790	7960
Utilization %	23	41	56

If in fact some of these 9 soap factories make their capacities available, this will tend to depress utilization. Some of the larger factories have modern plant: semi boiled, cold process and filled soaps are all represented: most recover no glycerine. Use of soapstock or acid oil does not appear to take place.

The rate of growth of demand for soap and soap powder is a matter of conjecture but it does seem that there is no urgent need to expand soap making capacity for the present. At Appendix 3, the nominal capacities and present utilisation of four of the larger soap plants in different parts of the country are given as examples.

There is an acute shortage of soap making fats so that at present just over 8000 mt tallow and up to 500 tons coconut oil are imported to help. Home produced tallow is poor in colour and costs Tsh 6.50 per kg, against Tsh 11.66/kg for poor imported tallow bought in 180 kg drums. A parastatal, the Agricultural and Industrial Supply Corporation (AISCO) imports caustic soda and sodium silicate and sells these to soap makers. Some local coconut oil is said to be used in soap compositions. It is not known whether the 4,300 mt imported palm oil is all used in vegetable ghee or whether some goes directly to soap. The soapstock from the refining of the palm oil which could easily amount to 10 per cent of the crude oil refined should certainly be used for soap making if movement is not over a long distance. Fortunately, such groundnut, sesame, sunflower and cotton seed oil as is available goes to edible outlets. About 1.000 mt madufa nut oil is consumed in soap making.

9. Administration, management and maintenance

9.1 Ministry of Agriculture

As part of Government decentrilisation in 1972 many of the executive functions of the Ministry of Agriculture (KILIMO) were transferred to Regional Administrations and parastatal organizations but the Ministry retained a co-ordinating functions control of research and the direction of national projects.

9.2 National Agricultural and Food Corporation (NAFCO)

The corporation is concerned with the operation of state agricultural enterprises. It was established in 1969; its chairman is the Minister of Agriculture. It is dependent on government and foreign aid; no internal capital is coming forward for investment which is taken as indicative of the limited success of various farm subsidiaries (26 in all) in their commercial operations (3).

9.3 General Agricultural Products Export Corporation (GAPEX)

GAPEX is a parastatal organization which handles the marketing of agricultural products (e.g. oils and oilseeds) not already controlled by other parastatals. It commenced in 1973. It would export cotton products on behalf of the Tanzanian Cotton Authority and along with TEA would try to meet demands of local cottonseed crushers. Gapex is the main share holder in the Multi-Purpose Oil Seed Pressing Company (MOPROCO) whose new mill at Morogoro scheduled to commence operation mid 1979 has a crushing capacity of 150 mt/24 hrs (single crush) followed by solvent extraction (this equals 37.500 mt in 250 days) followed by refining.

A second mill of 9,000 mt/annum crushing capacity, 4,500 mt/annum refining capacity is being built at Nachingwea but Gapex is a minority share-holder in this.

9.4 The Tanzanian Cotton Authority (TCA)

TCA, established in 1973, controls ginning, oil milling of cottonseed, crop promotion, marketing of raw cotton and is a 40 per cent share holder in the country's largest milling and refining enterprise VOIL (Vegetable Oil Industries Ltd.), Mwanza. It also has a 35 per cent share in MPROCCO.

9.5 The National Milling Corporation (NMC)

Set up in 1968 to control grain milling it in effect controls the main means of food processing in the country and in 1973 also became responsible for food marketing.

9.6 Other Parastatals

In addition to those listed above, parastatal corporations exist for the management of sugar, tea, sisal, livestock cashew nuts, etc.

9.7 Inter-parastatal relations

It appears from reading the published description of the duties and responsibilities of several parastatal agencies (marking the 10th anniversary of the Arusha declaration when social objectives were re-defined) that some overlap not to say competition may arise between them. As an example the Price Policy Review for 1978/80 (2) queries whether the parastatals for coffee, cotton and the National Milling Corporation could

not with advantage carry out purchases of produce for Gapex in the various regions, leaving merely a central management and co-ordinating function to the latter. Of the 570 Gapex employees 337 work outside of the capital dealing in 1977/78 with some 14.000 mt produce at a wages cost of Tsh 2.857m i.e. Tsh. 185/ton which is very heavy.

9.8 Management

Some management in the private sector was clearly organized on conventional lines with functions in the general, financial and technical areas delegated to appropriate people with a policy of obtaining oversees training and experience in countries such as India. Other managements were well below a reasonable standard as regards the control of operations such as refining, deodorising etc. Quality control was generally feeble and in answer to the question whether the free fatty acid of an oil was determined before adding caustic soda to neutralise it, the answer could be the caustic soda was added on a basis of experience. The idea of taking regular routine samples of oake from a screw press so as to check whether it continued to function efficiently, seems quite foreign. A Tanzanian Bureau of Standards has been set up and appears quite well informed on International Standards and Methods of Analysis for Oilseeds, Oils and Cakes (Codex Alimentarius, AOCS, British Standards, Indian Standards) and to be following an intelligent policy of selecting what best suits Tanzanian conditions of climate etc. So far everything is on paper as drafts for public approval. A laboratory is being built for control purposes when standards agreed become law. The relationship between the Bureau and those who carry on chemical control by experience rather than analysis may become strained when standards are implemented.

9.9 Maintenance

The classic maintenance problems of [illegible] sent in Tanzania. In the large public services [illegible] railway equipment of different national origins [illegible] upon the technical skill and experience of maintenance staff, larger inventories of spares have to be carried and replacements must come from overseas. Technical colleges (as distinct from the Dar-es-Salaam University) give basic training in trade skills. To the suggestion that

the problem could be at least markedly reduced by employing only one origin of supply for equipment of one particular class it was said that this could be embarassing for Tanzania if the supplier chose to restrict supply because of deteriorating diplomatic or financial relationships. This is certainly a valid point; yet the advantages of standardisation are so evident and so much used by both governments of developed countries as well as multi-national corporations that it seems some effort should be made in this direction so that Tanzania could share in the advantage. Certainly if a company is already equipped with a certain type of machine with which the staff are familiar (maintenance and operating) there is an argument for replacements or additions to be of the same origin. Where a foreign firm is supplying equipment to several locations they may be willing to maintain a nucleus of their own expatriate maintenance staff and some technical facilities (repair tools etc.) in Tanzania. This arrangement has the added advantage of providing a type of training for the Tanzanian mechanics.

Appendix 1

Contacts

Mr. F. P. Mrina	Principal Secretary, Ministry of Industries
Mr. Pallangyo	Director of Industrial Planning
Mr. Hanti	Industrial Training
Mr. Muwarka	Foods, Beverages and Tobacco Industries
Mr. E. Mchomvu	Chemical Industry (incl. soap)
Mr. Mworia	Small Industries and Cottage Food Industries
Mr. M. S. Mdope	Secretary to the Tanzanian Cotton Authority (TCA)
Mr. Masanja	Director of Crop Development, Ministry of Agriculture
Dr. Salah El Din Abd	FAO Country Representative, Tanzania
Mr. M.N. Pole pole	Agricultural officer (Economics), Ministry of Agricultlture
Mr. Tembe	Ministry of Trade
Mr. E. S. Seidler	Marketing Development Bureau, UNDP
Mrs. F. F. Katagira	Ministry of Agriculture
Mr. Christer Siegbahn	Chief consultant, Tanzania Industrial Studies and Consulting Organization
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Mr. Sharma	Tanzania Industrial Studies and Consulting Org. (Food and Beverages)
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Mr. J. Rwebogora	TCA Industrial Officer, Mwanza
Mr. S. I. Patel	Vegetable Oil Industries Ltd. (Man. Director)
Mr. N. V. Patel	Vegetable Oil Industries Ltd. (Prod. Manager)
Mr. J. Kambodia	Vegetable Oil Industries Ltd. (Fin. Controller)
Mr. A. Gajjer	Vegetable Oil Industries Ltd. (Chief Engineer)
Mr. W. Y. F. Maranda	Ukiriguru Cotton Research Centre (Dep. Director)
Mr. A. K. Mwakalinga	District Traffic Man., Mwanza, Tanzanian Rly.
Mr. Meghjee	TCA, Dar-es-Salaam (Assistant Marketing Manager)
Mr. Jessa	Jessa Soap Industries, DSM

Appendix 2

Producer Prices for the Main Scheduled Crops 1972/73 - 1979/80

Crop	Producer Prices (Cents/kg)							
	1972/1973	1973/1974	1974/1975	1975/1976	1976/1977	1977/1978	1978/1979	1979/1980
Foodcrops								
Maize	26	33	50	75/80	80	85	85	100
Paddy	56	57	65	100	100	120	120	150
Groundnuts	115	115	150	200	250	400	400	400
Castorseed	55	55	70	75	75	100	100	100
Sunflower - Black	-	-	-	-	-	150	170	170
Sunflower - Jupiter	57	55	75	100	110	150	150	150
Sunflower - Other	-	55	70	75	80	125	130	140
Simsim (Sesame)	120	160	200	200	250	300	330	350
Copra	-	-	-	-	210-230	220-250	230	230
Soya bean								225
Export crops								
Cotton - AR	113	113	150	200	200	230	240	300
Cotton - BR	60	60	65	100	100	115	120	130
Cashewnuts - SG	95	95	105	105	110	115	170+	170
Cashewnuts - UG	75	75	95	95	95	100	140+	140

Source: Marketing Development Bureau, Ministry of Agriculture, 1 October 1978

1/ Announced September 1978.

Appendix 3

Capacity and utilisation of some larger soap-making plants

Four of the larger soap-making factories have been selected as examples from the list of licenced units (dated 1977) provided by the Ministry of Industry. Figures for 1978 and 1979 are classed as projected.

Unit	Capacity (mt)			Actual (1977) and anticipated (1978 and 1979) production (mt)		
	1977	1978	1979	1977	1978	1979
1. Lake Soap Industries						
Laundry (Mwanza)	5500	5500	5500	5343	5500	5500
Toilet	2400	2400	2400	2175	2400	2400
Washing powder	600	600	600	518	600	600
Total:	8500	8500	8500	8036	8500	8500
2. Tip Soap and Glycerine Ltd. (Tanga)						
Laundry	9600	9600	9600	7891	7900	9600
Toilet	3600	3600	3600	661	700	840
Washing powder	Nil	Nil	Nil	Nil	Nil	Nil
Total	13200	13200	13200	8552	8600	10440
3. Babby Soap (Dar-es-Salaam)						
Laundry	1800	1800	4800	600	600	720
Toilet	Nil	Nil	Nil	Nil	Nil	Nil
Washing powder	450	450	1500	150	150	180
4. Mwanza Soap and Toilet Works.						
Laundry	4500	4500	4500	3600	4050	4500

Three plants make washing powders only; all the rest make some laundry soap; some combine laundry soap manufacture with either toilet soap or detergents; only Lake Soap Industries make all three.

Bibliography

(1) "The Currant State of the Coconut Industry in Tanzania and Proposals for the Establishment of a Coconut Development Authority" - Tanzanian Marketing Development Bureau, FAO/UNDP Project SF TAN 27. Ministry of Agriculture (January 1976)

(2) Price Policy Recommendations for the 1979 - 1980 Agricultural Price Review, Annex 2, Oilseeds, Ministry of Agriculture, Sept. 1978

(3) Report of the "Tanzania Oilseeds Projects Identification" - FAO/Bankers Programme, FAO Investment Centre, 5.12.77 (31/77 - DDC. TAN 14)

(4) "National Coconut Development Project - Phase I" A pre-feasibility study, Tanga. March 1978 (Fed. Rep. of Germany)

(5) "Tanzania Coconut Pilot Project". Project Identification Report May 1978. Regional Projects Dept., Eastern Africa Projects, Southern Agriculture.

(6) FAO Production Yearbook - Agriculture 1977. Vol. 31.

We regret that some of the pages in the microfiche copy of this report may not be up to the proper legibility standards even though the best possible copy was used for preparing the master fiche

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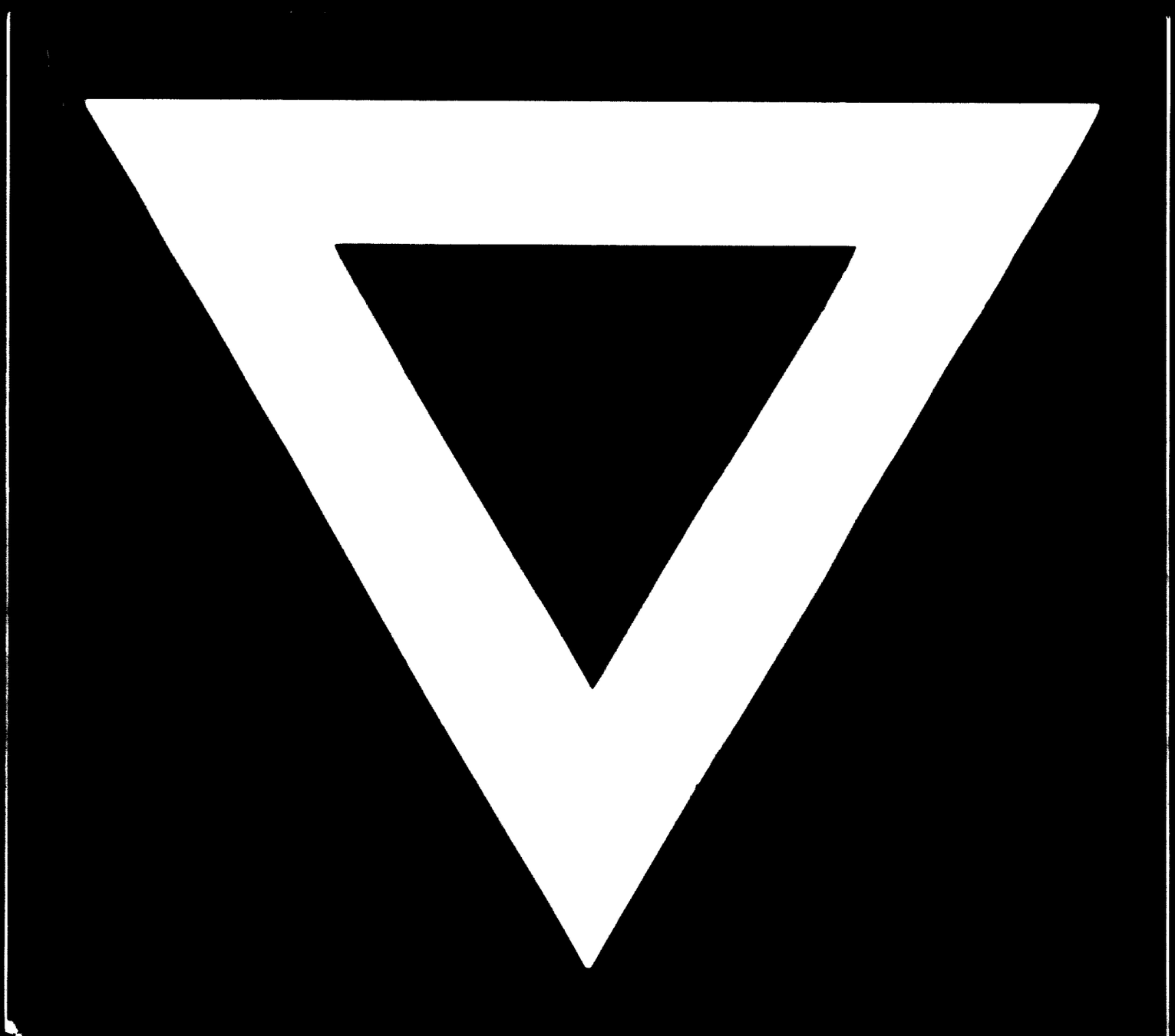

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