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UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
Vienna International Centre, P.O. Box 300, 1400 Vienna, Austria
Tel: (+43-1) 26026-0 · www.unido.org · unido@unido.org

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MARKET STUDY ON ESTATE-FARMING AND INDUSTRIAL PROCESSING OF CASSAVA INTO STARCH, GLUCOSE AND OTHER PRODUCTS

Findings and recommendations*

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

Based on the work of
Olavi Heinonen, International Expert in
Marketing, with Particular Reference to Cassava

Backstopping officer: Paul Wiedemann
Feasibility Studies Branch

* This document has not been edited

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Preface

The present market study for the industrial processing of cassava in Malawi has been carried out to evaluate the advisability of proceeding at this time to a larger-scale pre-investment analysis. As such, it is one of a large number of investment analysis recently completed and/or being implemented for individual countries of the sub-region and the PTA by UNIDO's Feasibility Studies Branch.

In carrying out this support study UNIDO's Feasibility Studies Branch was assisted by the Agro-industries Branch, with the active support of the UNDP/UNIDO field office in Lilongwe and the financial support of the IDDA. Throughout the study the local promoter NU LINE Food Products Limited has worked with UNIDO in the execution of the project.

The details of the study are presented in the ten following chapters. The results suggest, inter alia, that prior to the initiation of any larger-scale investment analysis, specialists from the FAO and UNIDO's Agro-industries Branch should carry out analyses of questions concerning the multi-cropping and related problems of the industrial processing of food products.

I. CASSAVA DEMAND AND SUPPLY IN MALAWI

According to the annual statistics of FAO (Appendix 1), Malawi produced 155 000 metric tons of cassava during 1989. The area harvested was 73 000 ha and the yield per ha was 2 125 kg. If the population - including one million refugees - is estimated to have been ca 9,0 million, the cassava production would have reached 17 kg a year and a head. Between 1979-1981 and 1989, the area harvested has grown from 45 000 ha to 73 000 ha, but the yield has deteriorated from 6 530 kg per ha to 2 125 kg/ha. The total production has nearly been halved from the 1979-1981 level of 292 000 tons.

Many natural and man-made factors have been contributing to this development, and Malawi has during the 1980's been forced to import maize to improve the supply of staple food. National and international experts of agriculture are well aware of the problems facing cassava production in Malawi. A mission report, quoted in different connections, produced by O. Onayemi for FAO, 1990, assumes the "real demand", including human food, animal feed and industrial raw material, to reach over 9 000 000 tons a year. Thus the demand potential would be nearly 60 times more than the registered production. People engaged in Malawian and other tropical areas' research activities are maintaining that the yield of cassava - under favourable circumstances, weather, rain, irrigation, fertilizing, soil conditions, pests, insects etc., can reach levels of 35-40-50, even 60 tons per ha.

In spite of the rising needs and expectations associated with cassava production, progress has been uneven. World production grew from 90 million tons in 1973 to 150 million tons in 1989, but in certain regions and countries production actually declined:

	1973	1981	1989	
Brazil	27	24	23	million mt
India	6	6	5	
Indonesia	11	14	17	
Thailand	6	15	24	
Nigeria	9	11	17	
Zaire	9	13	16	

Thailand is a good example of export-led expansion, whereas Indonesia is traditionally both a consumer and an export producer country. Nigeria and Zaire have grown rapidly as cassava producers, while some other African countries have either stagnated or declined.

In the mission report by O. Onayemi the author lists a few potential users of cassava. After the study was concluded, however, some of the would-be industrial users gave up trying to substitute cassava for other raw materials used in milling, biscuit-making and other human food or animal feed. It was soon evident that the ambitious demand assessments had to be drastically revised. The remaining part of the markets, ie human consumption and animal feeding, which normally account for 80-90 per cent of the total consumption, is nearly impossible to appraise. We know that commercial mills in Malawi sold ca 35 000 tons of stock feed in 1990. Of this amount, the Grain and Milling Company sold 14 000 tons, 133 per cent more than in 1987. We also know that maize is the main raw material of milling products, and although the price is somewhat higher than cassava, it is more stable and has more value to the consumer than cassava.

Even if we had to revise the yield figures upwards and assume that the production is by far underestimated, even the production figure of one million tons would be very difficult to explain.

According to many experts, who have been propagating cassava as an important crop for poor countries with population problems for a long time, proper management can be expected to increase production by 3-5 times the recent levels. Unfortunately FAO world statistics give only a scant support to the statements on yield opportunities.

During 1979-1989 the cassava yield per ha has gone up from 8 985 kg/ha to 9 842 kg/ha on the world scale. This increase of ten per cent in ten years is far too low to offer significant improvement to populations growing at the annual rate of three per cent or more. The figures from Africa are only slightly higher and Malawi is one of the worst cases. If the scientific work on cassava is based on facts and not on wishful thinking at least some encouraging cases should be recorded.

The Asian producers' growth record seem to confirm the assumption that yields already high in 1979 were even proportionately higher in 1989 (a twelve per cent increase 1979-1989). But even in high-yield countries with abundant home and export markets, yields of 15 000 to 20 000 kg per ha were attained, up by some 10 per cent from 1979.

II. BASIC PRODUCTS - PRODUCTION AND CONSUMPTION

"Where primary cassava production takes place, between 80 and 100 per cent of farmers grow the crop mainly as a staple food."

"In the secondary production areas cassava is mainly grown as a source of income and eaten as a snack."

(Ten recommendations for cassava production in Malawi, published in August 1991 by the Ministry of Agriculture, Appendix 2.) The major advantage cassava has in comparison with other staples is the high content of dietary energy, ie the amount of calories per a unit of weight. It is also comparatively rich in vitamin C. People in tropical countries eat cassava roots fresh, dried, chipped or pelleted, milled and baked. It is generally considered as a valuable "security crop" that gives a reasonably good yield even in adverse conditions.

As long as consumption and harvest are simultaneous, fresh cassava fills the need of calories for the people engaged in harvesting. Raw cassava has to be eaten or processed quickly within 24 hours of harvest. This means that supply can temporarily exceed demand and the prices will fall. On the other hand, fresh cassava may not be available when other crops fail. In other words, if cassava is to fill its role as reserve food at critical times, there must be stockpiles of dried, milled or otherwise processed goods to be distributed effectively and sold at acceptable prices. Although strong in calorie content, cassava would still not satisfy the nutritional needs of consumers.

The idea of cassava as a reserve crop supplying the rapidly increasing population with inexpensive calories has met uncommonly many obstacles in Malawi. The supply of fresh roots has been obstructed by droughts and floods, pests and diseases, even toxicity met in some varieties. There are also "Cultural and Socio-economic or Technical constraints" (The leaflet on ten recommendations), like the following:

- no agronomic practices adequately implemented
- no price structure to eliminate the risk of production
- no marketing
- no processing

- no packaging or storage or distribution
- no consumer preference compared with maize and other cereals
- irregular supplies, poor quality, manual processing
- lack of support from the agro-based commercial organisations like ADMARC

Still, the product or products made of cassava can be competitive in certain specialized uses. Cassava chips and pellets can be a supplement to stock feeds. Cassava starch can be competitive as a material for glues, gums and adhesives. Cassava flour can be used as such or as an additional material for cooking and baking. If the problems of viscosity and flavour can be solved, cassava glucose might be able to offer resistance to high-volume, low-price competitors using maize and potato or other materials. But the market is small and fragmented, which means that a domestic producer would have to supply small amounts to varying specifications and defy the economics of scale utilized by foreign suppliers.

III. TRADE AND DISTRIBUTION OF CASSAVA

For the greater part of the rural population, cassava moves directly from production to consumption. This is the case particularly concerning fresh roots recently harvested. The step from this stage of market development to large scale production and marketing is a total change of the economic culture.

Cassava supplied by small farms can be sold on the spot to retail outlets, local markets or mobile traders. There is no regional or national wholesale organization offering to buy the harvest at minimum prices. The prices quoted by ADMARC are generally considered too low, and ADMARC is not handling the merchandise anyway. In spite of experiments with cassava flour offered by retail shops, millers have not been induced to sell the product and the major consumer outlets in towns and villages have not extended their product lines with cassava.

The industrial community of Malawi, including major domestic and international enterprises, would probably test and acquire smaller amounts of processed goods - either primary products like chips and pellets or secondary ones like starches - if these were up to the users' specifications and clearly cheaper than the imports. So far, however, this transition of the trading patterns has not materialized.

IV. PRICING

According to the "Feasibility Report" by NU LINE FOOD PRODUCTS LIMITED, dated August 12, 1989,

> "Revenue is based on K 100 per tonne farm gate price which is less than half of the current market price of kwacha 250 per tonne for cassava in Malawi. It is assumed that all the cassava will be sold to the company itself for processing into starch, glucose, ships and pellets, bread making and cassava flour, cassava rice." (Appendix 3)

According to other sources, fresh cassava can be bought at 25-30 tambala per kg. Dry cassava would fetch prices like 28-39 tambala/kg. The ADMARC price recommendation has been 35 tambala, but this price level has been considered too low by farmers.

According to the above report by NU LINE, cassava chips could be sold for exports at kwacha (later on kwacha = K, 1 US dollars = 2,70 K) 420 per tonne, F.O.T. Blantyre. Obviously this price would require acceptable export quality. In the price calculations of NU LINE there is no cost for the planting stalks. In "a preliminary feasibility analysis" on cassava starch and glucose production the author, Mr. Rafiq Nathanie makes the following statement:

> "NU LINE has developed its own estate and will get the raw material at no cost while Thailand manufacturers buy from small growers who control the price."
>
> "Freight costs from Thailand to the EEC are higher than from Malawi to EEC because Malawi is geographically nearer to the EEC than Thailand."

Thailand's success in the EEC market has been based on low tariffs, foreign investment in machinery, deepwater port facilities and large vessels capable of high-volume transportation. In short, Asian producers are enjoying the benefits of cost leadership

(large-scale farming and processing, low prices, high yields, appropriate technology for cassava processing). In the analysis, the author suggests that the starch produced in Malawi will during the two first years of operation sell 6 600 tons at K 600 per ton. Glucose is expected to sell (two years form the start) 3 000 tons at K 1200 per ton. (Appendix 4)

The landed cost of starch imported mainly from Zimbabwe and South Africa (import price plus import duty) was ca K 1.60 per kg both for starch and glucose (1989). The amount of starch imports was 200 tons in 1989, down from 292 tons in 1988 and from 436 tons in 1987. The volume of glucose imports increased from 193 tons in 1987 to 360 tons in 1988 and to 440 tons in 1989. The steep decline of starch imports has been explained by the fact that KK Millers supply the David Whitehead Co with some 240 tons of starch milled from cassava chips in a versatile hammer mill which also uses maize as raw material.

The price of starch proposed by NU LINE seems to be rather low but one has to observe that transportation and other export costs will most likely drive up the price to a level where it may not be competitive with marginal sales from the large-scale manufacturers in Africa and Europe.

By international standards, the proposed processing capacity fro starch and glucose is far too small to be competitive. For the Malawi market, which is now mainly supplied from the neighbouring countries, the capacity is far too large.

V. INDUSTRIAL PROCESSING OF CASSAVA

To ensure technical feasibility of the starch and glucose plants, NU LINE calculates that considerable inputs of different materials are needed.
Apart from the irrigation investment, which is estimated to cost K 4 000 000 , fertilizer will according to NU LINE cost K 110:- per ha. According to Mr. Novero's report from January 1991, stalks will cost K 660:- per ha. Mr. Novero calculates the total cost per ha to reach K 1.700:- whereas NU LINE (for a larger area) estimates the cost per ha at K 1 200. (Novero, DP/ID/SER.A/1429.)
These costs of the primary production, however, are modest compared with the investment required for the starch and glucose production.

According to NU LINE, the investment in buildings, starch and glucose machinery and other equipment would cost K 18,5 million in forex and 4,2 million in local currency. To run this capacity at the rate envisioned, chemicals worth ca 800 000 kwacha would have to be imported annually.

If the yield of the cassava plantation is lower than the expected 25 tons/ha during the first year and 35 tons/ha during the following years, and if the real yield stays closer to the national level of less than 5 tons/ha, the profitability is risked.

If the starch and glucose plants have to accept low operating rates and/or severe price competition, the production based on domestic sales would be clearly unprofitable and exports would have to bring in at least four times the value of present import to make an acceptable profit.

VI. IMPORTS TO MALAWI

Starch and glucose, related products

Starch for industrial use was in 1987-1989 imported mainly from Zimbabwe and South Africa. The volume and value declined steeply from 1988 to 1989. According to Mr. C C Patel, KK Millers, this was caused by the fact that the David Whitehead textile company switched to using cassava and maize starch from this domestic source. The amount consumed by Whitehead is a relatively stable 240 tons a year.

The remaining amount of industrial starch is taken up by the second large consumer, the Packaging Company of Malawi. They buy up to 250 tons of maize starch from Zimbabwe and they say the volume is growing. So far no Malawian supplier has been able to meet the specifications of the company. (Appendix 5)

In the category of Dextrins and Glues / Starches and Glues, the value of imports has been rising, but the amounts are modest. These special products are used by bottling companies for labelling beer, soft drink and liquor bottles. They are also used by printers and packaging manufacturers. Special glues are used by plywood manufacturers, too, but not one of the companies mentioned above was using any cassava-based products. Maize, wheat and potato starch were more popular, for various technical and commercial reasons.

Major import countries were South Africa, Zimbabwe and the largest EEC countries. In the case of glucose imports, too, the market is dominated by two large-scale users: Universal Industries (food and bakery, biscuits) and Sterling International (pharmaceuticals). The main source is South Africa. Universal has studied the viability of using domestic cassava for making starch and glucose. The conclusion was negative, partly because of poor quality and irregular deliveries, partly because of the low level of

consumer acceptance. Universal employs ca 450 people and is about ten times larger in terms of sales compared to NU LINE at present.

Imports to Malawi, 1987-1989

	Tariff no	Item	1000kg volume	1000K value	1000K duty
1987	110801	Starch	436	468	77
1988			292	328	72
1989			200	270	52

1987	350501	"Glues"	1)88	272	48
1988			102	406	60
1989			102	550	89

1987	170201	Glucose	293	587	84
1988			360	587	146
1989			440	594	114
----					

1) This category of value-added products, called dextrins and glues/starches and glues, reached two times the value of starch imports in 1989. The landed cost per kg was K 6.26- compared with the figure for starch, K 1.61/kg.

VII. MARKET DEVELOPMENT: PROSPECTS

During 1986-1989, starch imports developed as follows:

(1 000 kg)		
Zimbabwe	1986	300
S Africa		68
Zimbabwe	1987	310
S Africa		117
Zimbabwe	1988	239
S Africa		53
Zimbabwe	1989	185
S Africa		11

Glucose was imported from South Africa in the following amounts:

(1 000 kg)	
1986	238
1987	181
1988	323
1989	436

Glues" import volumes from neighbouring industrial countries:

(1 000 kg)		
Zimbabwe	1986	25
S Africa		15
Zimbabwe	1987	13
S Africa		66
Zimbabwe	1988	22
S Africa		41
Zimbabwe	1989	13
S Africa		60

The import statistics available from the customs authorities do not indicate that any of these product categories would have been growing steadily in volume, With the material at hand, it is not possible to assess the long-term market development. Interviews with major importers would indicate that

- starch consumption in packaging is growing
- starch consumption in cotton treatment is stable
- glucose consumption in food and pharmaceutical products is stable (Universal) or growing (Sterling).

Glue users like breweries and distilleries are growing in production volume. Lever Brothers is presently introducing soya mince using glucose and gravy mix using starch. So far the amounts are small, but if the national marketing campaigns meet with success, domestic manufacturers of starch and glucose may get the opportunity to supply them. In the food markets, however, cassava does not seem to be very attractive as a raw material.

As far as cassava and primary products are concerned, there are few signs of any increase of production or the yield/ha. This would indicate that the increasing population is NOT using the reserve crop in increasing volumes. It is of course difficult to estimate how much improved availability and lower prices would affect consumer behaviour. Experiences from other countries suggest that there is some elasticity of demand, ie if income rises, cassava consumption rises. On the other hand, consumption can decrease when a country develops and people move to urban communities.

The users in Malawi speculating in industrial opportunities seem to think that the price difference between cassava and maize is too small to justify even a partial blending of them. Like one of the interviewees in industry put it:"Cassava is not cost-effective."

VIII. ANIMAL FEED MARKETS

Recently a German manufacturer of pelleting plants offered to design and build a pelleting plant for NU LINE. Against the cost of the installation at one million Deutschmark the company was willing to offer NU LINE an opportunity to sell pellets to Germany as part of a barter deal. This kind of a transaction would no doubt fill some of the capacity proposed, and evidently NU LINE could be able to improve its technical and professional performance. Whether the plant would be competitive is another matter. In the offer, nothing was said about how the price of pellets should behave in the marketplace and how the profitability of the pellet plant would be affected by the capital-intensive operation.

The marketing of cassava chips and pellets for animal feed in the EEC countries by Thailand, Indonesia and Malaysia has been a great success, but predominantly because the prices have been attractive for the growers of pigs, poultry and cattle. This has been achieved by keeping up the barley and other cereal import duties to protect the EEC farmers. Cassava has been favoured by exceptionally low tariffs, and some experts have made the forecast that cassava duties go up when the farmers' lobbies consider the imports excessive so as to harm their own production.

In recent years, however, this business has moved volumes of millions of tons and a new industry has been born in the countries mentioned. If also the domestic industrial users in Malawi could use cassava pellets when mixing stock feed, this would give the manufacturer a direct access to the distribution channels without the many problems connected with fresh cassava. There should also exist possibilities to start the pellet and chip production with an intermediate technology that substitutes labour for capital.

IX. INVESTMENTS PROPOSED BY NU LINE

In the Liwonde Feasibility Report of August 12, 1989, by NU LINE FOOD PRODUCTS LIMITED it is suggested that the company invests one million kwacha as share capital and 3,2 million in loans (local and international) in the cassava plantation of eventually 2 424 (year 2) ha. According to the calculations in the report, the total cost of the project would by year 1 (after year 0) stand at roughly one million kwacha. The gross profit before depreciation would by year 2 go up to 1,5 million kwacha and by year 2 to 6,1 million. The profit before tax would by year 1 be over one million kwacha and by year two it would be 3,2 million.

This is only a vision. The farm - or actually a rather small part of the total hectare - is managed on a contract basis by the National Bank of Malawi (Mr. Tunney), the chief executive is taking decisions in a very improvised manner, there is no person as yet employed as the responsible manager of farm operations. This kind of recruitment was already initiated by Mr. Novero some 12 months ago. But the company "did not have the money" - According to Mr. R. Nathanie.

Mr. Novero also recommended, that no further land development should be made by the company until a feasibility study on irrigating cassava is produced. During Mr. Heinonen's stay in Malawi Mr. Nathanie implied that the soil in Liwonde was considered inferior by the consultant assigned to the irrigation study, but obviously there was no document available to confirm this. If cassava cannot be produced and sold in the volumes suggested by the NU LINE study, the revenue will be far less than forecast and in a worst-case scenario it would not cover the total cost. The risks involved would be smaller and the prospects of added revenue better if the NU LINE company would (as recommended by Mr. Novero) introduce multiple cropping with several other products apart from cassava. This would not require irrigation in all parts of the estate.

In the NU LINE document called "Cassava starch and glucose project, a preliminary feasibility analysis" (undated and unsigned but probably produced in the summer of 1991), it is suggested that 9,2 million kwacha of equity and 13,8 million of long-term loans should be invested in one plant manufacturing cassava starch and an other plant manufacturing glucose out of the starch.

The total cost of the operation would by year one (after year 0) go up to 4,3 million kwacha and the total profit after depreciation would by year one be 3,2 million and by year two it would be 4,2 million. The revenue would by year two reach 8,8 million kwacha. The profit before tax would reach 2,8 million kwacha by year two and later it would exceed 3 million kwacha. The estimate of the total cost does not include the cost of raw material.

In the foreseeable future, the volume of starch and glucose to be produced by NU LINE cannot be consumed by the Malawi market. It also may happen that the industries currently using the bulk of starch and glucose imports would not all be able or willing to switch to NU LINE from their present suppliers. To assess the export markets is outside the scope of this study, but in most industrial markets, there is the general tendency to eliminate old, small and uncompetitive mills and to concentrate the production into a few moderns units capable of satisfying the needs of the national markets. A new supplier to these markets would have to offer all the desired benefits plus a competitive price. At present, the NU LINE company is only a minor domestic operator in the chewing gum market with a turnover of 1,1 million kwacha (including other income than sales revenue?) and a profit before tax of 50 000 kwacha (1990). Appendix 6. The intended transition into an integrated estate supplying raw material to a factory, marketing the goods to export customers, managing a large and partly complex organization (skilled labour), monitoring the financial performance and adapting the business to rapidly changing conditions is a challenge not to be underestimated.

X. PROJECT APPRAISAL AND RECOMMENDATIONS

The population of Malawi

1977	5,5 million
1987	8,0 million
2000(UNestim.)	11,4 million

Growth of Malawi GDP at constant factor cost

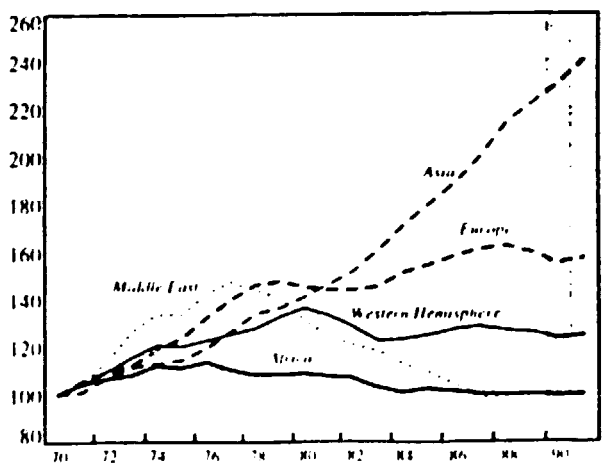
Annual change:	1980-1987	0,3 %
	1983-1988	3,3 %
	1980-1988	2,2 %

During 1980-1987, the annual rate of population increase was 3,1 per cent.

According to the IMF world economic outlook of October 1990, the GDP per capita developed in different regions as follows:

Chart 13. Developing Countries: Real GDP per Capita by Region[1,2]

(1970 = 100)



[1] Composites are averages of percent changes for individual countries weighted by the average U.S. dollar value of their respective GDPs in 1988.

[2] The shaded area indicates staff projections.

For Africa and Malawi, this is partly a consequence of the fact that the population is growing faster than the national economy. Against this background and the FAO statistics on production indicating that many staple crops including cassava have not increased at all or may even have declined, one could draw the conclusion that the need for cheap dietary energy sources must be growing.

In the case of large-scale growing of cassava this would seem to be a problem of hectare and yield as well as of building up an effective distribution system. For a single entrepreneur to create a functioning distribution system may be a problem too hard to solve.

ADMARC or a corresponding system should intervene and offer farmers stable prices as well as to move the merchandise to markets and outlets frequented by the consumers. If this does not succeed, it is very hard to see any sense in an attempt like that of NU LINE.

If the economy grows too slowly to improve the consumers' living standards, it is also hard to see how the market for cassava starch and glucose would attain any significant growth. In the case of industrial raw materials like these, it should be observed that there are many different and well established competitors which at least partly can be considered superior to cassava-based products.

Referring to what has been said in chapters 1 to 9, it would appear what both demand and supply conditions would meet in an optimum way, if the NU LINE company tried to concentrate its cassava operations on producing and selling ships and pellets to stock feed markets both in Malawi and abroad. This would give the company an opportunity to invest against a barter agreement, to locate relatively easily a limited number of customers (feed milling), and to focus its activities on the quality, service and profitability of a single product category.

Recommendations

As far as recommendations are concerned, this report, based more on qualitative than quantitative findings, can first of all agree 100 per cent with the report or Mr. Novero. Second, Unido and the sponsor in Malawi should discuss the following points:

- The NU LINE FOOD PRODUCTS should synchronize the plans for cassava and starch/glucose production. According to the preliminary feasibility analysis, the estate will produce 120 000 tons of cassava, which, divided by the conversion rate of 4.70, would yield more than 25 000 tons of starch. Only 11 200 tons are needed.

- The company should also update its feasibility calculations based on more realistic assumptions about the markets and the production opportunities. So far, very few factors suggest that the plans can and will be executed successfully.

- Unido should commission a competent accounting specialist at the headquarters to review the company reports from 1986 to 1990 (appendix 6) and to appraise the financial resource of the NU LINE company in relation to what will be demanded if the plans are to materialize.

- The market study gives scant information about how the cassava and the various processed goods can be sold at a profit in Malawi and abroad, but the general impression remains that NU LINE at present is not strong enough to reach the high ambition level expressed in the plans.

- With the information available, it is recommended that Unido should not consider further initiatives in this matter. The multi-cropping or intercropping exercise can best be assisted by FAO.

Helsinki, Finland, January 10 1992

Olavi Heinonen

CASSAVA AREA HARV SUP RECOLTEE SUP COSECHAD			1000 HA	MANIOC YIELD RENDEMENT RENDIMIENTO			KG/HA	YUCA (MANDIOCA) PRODUCTION PRODUCTION PRODUCCION			1000 MT
	1979-81	1987	1988	1989	1979-81	1987	1988	1989	1979-81	1987	1988	1989
WORLD	13929	14631	14799	14997	8305	9256	9535	9842	124280	135802	141110	147500
AFRICA	7269	8243	8309	8316	6719	7081	7192	7440	48847	58368	59757	62098
ANGOLA	487	500F	500F	500F	3901	3940	3960	3040	1850	1970F	1980F	1920F
BENIN	98	95	115	120	6407	6599	6806	8319	631	570	790	1002
BURKINA FASO	4	1	2	6F	8114	6217	3525	5333	28	7F	8	32F
BURUNDI	37	50F	51F	52F	11164	11590	11108	11538	412	579	567	600F
CAMEROON	518	600F	600F	600F	2464	2500	2500	2550	1273	1500F	1500F	1530F
CAPE VERDE	1				4000	15500	14250	6750	4	6	8	4F
CENT AFR REP	299	165	167	160F	3077	3210	3202	3375	920	529	533	540F
CHAD	55	70F	72F	72F	3723	4357	4583	4583	205	305*	330F	330F
COMOROS	10	17F	17F	22F	2500	2647	2882	2500	25	45F	49F	55F
CONGO	93	103	106	105F	6759	7258	7161	7170	631	746	761	760F
COTE D'IVOIRE	203	235	242	230F	5208	5506	5508	5652	1067	1294	1333	1300
EQ GUINEA	22	26F	26F	26F	2340	2135	2154	2173	53	56F	56F	57F
GABON	40	43F	43F	43F	5999	6000	6118	6118	242	255F	260F	260F
GAMBIA	2	2F	2F	2F	3000	3000	3000	3000	6	6F	6F	6F
GHANA	220	390	354	415	8647	6999	7883	8017	1894	2726	2788	3327
GUINEA	69	70F	70F	72*	7001	6000	5714	5000	480	420F	400F	358
KENYA	68	65	65F	65F	9223	8500	9231	9538	588	551	600F	620F
LIBERIA	45	47	52	50F	6667	7998	6507	8000	300	372	447	400F
MADAGASCAR	277	311	320F	322F	5925	7000	6975	6938	1641	2178	2200F	2250F
MALAWI	45	65	62	70	6530	2611	2182	2125	292	169	135	155
MALI	7	8F	8F	8F	6599	9125	9125	9125	59	73F	73F	73F
MAURITIUS					20807	17813	15000	14545				
MOZAMBIQUE	601	580F	580F	580F	5161	5810	5862	5962	3100	3370F	3400F	3400F
NIGER	25	27F	27F	28F	7651	7925	7852	7709	191	210F	212F	212F
NIGERIA	1183	1300F	1300F	1300F	9155	10769	11538	12692	10833	14000F	15000F	16500F
REUNION					10078	10000	10000	10000	4	5F	5F	5F
RWANDA	43	42F	44F	40F	13432	9276	8064	9000	578	390	390F	360F
SAO TOME PRN					11111	11667	11667	11667	3	4F	4F	4F
SENEGAL	8	14	5F	5F	3933	3745	3000	2400	28	53	15F	12F
SEYCHELLES					5000	5000	5000	5000				
SIERRA LEONE	24	35F	35F	35F	3921	3314	3314	3314	94	116F	116F	116F
SOMALIA	3	4	4	4F	10954	10550	10805	10465	35	42	44	45F
SUDAN	47	35*	30*	10*	2569	2205	2167	1500	125	80*	65*	15*
TANZANIA	450	700F	700F	700F	12026	8571	8857	9000	5547	6000F	6200F	6300F
TOGO	43	45	61	55*	9408	7875	6773	7320	404	355*	413	403
UGANDA	305	313	350*	340F	6936	9000	7149	7353	2122	2819	2502*	2500F
ZAIRE	1863	2206	2207	2210F	6949	7355	7368	7376	12942	16251	16254	16300F
ZAMBIA	56	67	70	72	3252	3441	3411	3604	183	230F	240F	260F
ZIMBABWE	18	21F	22F	23F	3007	4005	3955	3911	55	86F	87F	88F

N C AMERICA	169	183	182	192	4804	4929	4913	4901	613	616		
ANTIGUA BARB					4816	5556	5556	5500				
BAHAMAS					13253	14000	14000	14000	1	1F	1F	1F
BARBADOS					24624	24000	24000	24000	1	1F	1F	1F
CAYMAN IS					4111	5000	5000	5000				
COSTA RICA	5	7F	7F	7F	3551	4154	4154	4154	17	27F	27F	27F
CUBA	63	71F	73F	73F	4459	4296	4178	4178	290	305F	305F	305F
DOMINICA					9896	9779	9869	9864	1	1F	1F	1F
D' MIRICAN RP	19	17	20	25	5053	5614	6150	6339	98	98	126	156
EL SALVADOR	2	2	2	2	11237	15033	14353	12167	22	28	24	22
GRENADA					6570	8000	7727	7727				
GUADELOUPE					8667	15154	15000	16411	1	3	3F	3F
GUATEMALA	2	3F	3F	3	3301	3203	3103	3139	8	10	9F	9
HAITI	63	68F	62F	68F	4002	4265	4191	4118	252	290F	290F	280F
HONDURAS	2				4513	17500	17500	17500	8	7F	7F	7F
JAMAICA	2	1	1	1	11406	12415	12227	11722	25	17	14	10
MARTINIQUE		1F	1F	1F	2700	3333	3467	3684		3	3F	3F
MEXICO	2		1	1F	12329	8539	3817	3900	26	1	4	4F
NICARAGUA	3	6F	6F	6F	10128	11404	11379	11525	26	65F	66F	68F
PANAMA	5	5F	5F	5F	7573	7319	7276	7300	36	36	36	37F
PUERTO RICO					8260	8072	8134	8276	3	2	2	2F
SAINT LUCIA					3462	3241	3241	3241	1	1F	1F	1F
ST VINCENT					12000	11724	11333	11333	3	3F	3F	3F
TRINIDAD TOB					12103	11031	11067	11067	4	1	1F	1F
SOUTH AMERIC	2564	2465	2293	2390	11622	12046	12307	12564	29798	29690	28215	29902
ARGENTINA	22	15	15F	15F	9128	10158	10000	10000	202	148	150F	150F
BOLIVIA	17	41	42	30	11854	10366	10175	10361	204	425	430	312
BRAZIL	2065	1936	1757	1853	11775	12120	12300	12518	24315	23464	21612	23247
COLOMBIA	212	159	149	150	9763	7922	8613	8640	2070	1260	1262	1396
ECUADOR	24	22	21	23	9110	5857	5006	5882	218	131	120	135
FR GUIANA	1	1	1F	1F	10579	8521	8750	8514	8	6	6F	6F
PARAGUAY	147	205	230	230F	13726	16809	16954	17391	1977	3468	3691	4000F
PERU	33	45	37	29	14453	10343	10494	11034	491	466	302	325
SURINAME					6425	10714	10500	12000	3	3	2	3F
VENEZUELA	43	40'	41'	41F	7574	7995	8031	8039	322	318	328	328F
ASIA	3814	3714	3999	4053	11704	12031	13020	13118	44690	47654	52069	54378
BRUNEI DARUS					8233	8924	8924	8924	1	1F	1F	1F
CAMBODIA	24	16F	16F	17F	6100	7000	7188	6667	140	112F	115F	110F
CHINA	231	233F	232F	227F	14623	14314	14120	14037	3300	3330F	3277F	3185F
INDIA	345	265	270	270F	17213	10147	19327	19144	5921	4814	5213	5250F
INDONESIA	1413	1222	1303	1353	9518	11749	11873	12254	13932	14056	15471	16581
LAOS	4	6F	6F	7F	15110	13858	14063	14462	68	86F	90F	94F
MALAYSIA	34	37F	37F	38F	10297	10630	10627	10528	347	389	390	400'
MALDIVES					2667	3375	3375	3222				
MYANMAR	4	8	5F	5F	11663	11408	10943	11321	42	90	58'	60F

	CASSAVA AREA HARV SUP RECOLTEE SUP COSECHAD		1000 HA		MANIOC YIELD RENDEMENT RENDIMIENTO		KG/HA		YUCA (MANDIOCA) PRODUCTION PRODUCTION PRODUCCION		1000 MT	
	1979-81	1987	1988	1989	1979-81	1987	1988	1989	1979-81	1987	1988	1989
PHILIPPINES	203	209	217	213	10980	8517	8503	8666	2226	1784	1846	1847
SINGAPORE					11000	11000	11333	21000	1			
SRI LANKA	54	47	50	51F	9712	9129	9838	9608	520	427	492	490F
THAILAND	1053	1371	1547	1552	14330	14266	14421	15118	15128	19554	22307	23460
VIET NAM	449	300F	316	320F	7352	9000	8892	9063	3300	2700F	2810F	2900F
OCEANIA	13	17	16	17	11102	11063	10800	10870	150	189	174	180
AMER SAMOA					4750	5000	5000	5000				
COOK ISLANDS					32258	32501	32501	32501	4	4F	4F	4F
FIJI	1	3	2	3F	18667	11935	10530	10520	10	37	20	26F
FR POLYNESIA					18532	18333	18333	18333	7	5F	6F	6F
NEWCALEDONIA		1F	1F	1F	8663	5818	5593	5484	3	3F	3F	3F
NIUE					3846	3846	3846	4000				
PACIFIC IS	1	1F	1F	1F	9145	9909	10091	10000	10	11F	11F	11F
PAPUA N GUIN	10	11F	11F	11F	10277	10476	10377	10524	99	110F	110F	111F
SAMOA					10667	13333	13733	14167				
SOLOMON IS					12583	14459	14865	14667	1	1F	1F	1F
TONGA	1	1F	1F	1F	12415	14091	14182	14273	14	16F	16F	16F
WALLIS ETC					10435	10468	10468	10468	2	2F	2F	2F
DEV PING M E	13125	14072	14235	14424	8946	9284	9477	9797	117453	130650	134907	141305
AFRICA	7222	8208	8279	8336	6745	7101	7210	7448	48722	58288	59692	62083
LAT AMERICA	2733	2647	2475	2572	11200	11555	11763	11992	30612	30590	29109	30844
NEAR EAST	47	35	30	10	2669	2286	2167	1500	125	80	65	15
FAR EAST	3109	3165	3435	3489	12158	13113	13353	13809	37844	41503	45867	48183
OTH DV.PING	13	17	16	17	11102	11063	10800	10870	150	189	174	180
CENTR PLANND	704	549	564	563	9706	11209	10995	10996	6836	6151	6202	6195
ASIAN CPE	704	549	564	563	9706	11209	10995	10996	6836	6151	6202	6195
DEV PING ALL	13829	14621	14799	14987	8985	9356	9535	9842	124289	136802	141110	147500

The following recommendations are therefore formulated in order to ensure an optimum cassava production.

1. Land preparation

Uproot most of the rootstocks of the trees and shrubs in a recently cleared land. Dead roots if left intact in the soil could be a source of severe fungi that induce cassava root rot.

In general, ridges are recommended. However, in dambos and areas prone to water logging conditions, high ridges and/or mounds are recommended in order to improve drainage and hence prevent root rot. The mounds should be constructed in staggered manner to control water movement thus reduce soil erosion. No mounds are recommended on steep slopes as these will encourage run off hence soil erosion.

2. Spacing

The optimum spacing recommended for most of the cassava varieties in Malawi is 90cm x 90cm giving about 12,346 plants per hectare. Where farmers are ridging at 1.2m apart, the spacing between planting stations should be between 0.45cm and 0.50cm apart, single row, giving approximately 16,667 to 18,520 plants per hectare. The increase in the density generally reduces the root size. Many farmers who grow cassava as a cash crop prefer a high planting density in order to have relatively many small roots that sell easily and are preferred by the cassava-snacks consumers. However, from research results, it is not advisable to exceed 20,000 plants per hectare.

3. Choice of varieties

It is recommended to plant high yielding and high-quality improved varieties torelant to pests and diseases. All currently recommended varieties are susceptible to mealybug and to some other diseases/pests. However some of the promising resistant varieties have not yet reached the stage of release to the farmers.

Todate four local cassava varieties have been identified and recommended:

(i) Mbundumali or *Manyokola:* (Low cyanide type) Sweet variety well spread throughout the country; medium maturing, between 12 and 15 months after planting (months after planting) and yields between 15 to 20 tonnes per hectare. Stands better the attack of green spider mite in the field but is very susceptible to mosaic virus disease and mealybug.

(ii) Gomani: (High cyanide type) Bitter variety which is early maturing, 9 to 12 months after planting and yields between 15 to 25 tonnes per hectare depending on

soil conditions and management. Its field could be maintained clean from mosaic if careful selection of disease-free planting material is done. This variety is very susceptible to green spider mite and to cassava mealybug especially when planted late.

(iii) Chitembwere: (Low cyanide type) Sweet variety which is late maturing, 15 to 18 months after planting and yields between 20 to 23 tonnes per hectare. It stands better the attack of mosaic disease and green spider mite but suffers greatly from mealybug.

(iv) Nyasungwi: (Low cyanide type) Sweet variety which is medium maturing, 12 to 15 months after planting and yields between 12 to 20 tonnes per hectare. It stands better to mosaic disease and green spider mite than to mealybug.

4. Seed selection

Mature woody cuttings of 10 to 15 months old are the best for planting and give better yield than terminal green cuttings or cuttings that are too old. The length of a cutting should be around 25 to 30cm long.

The planting material should be collected from cassava plants free of major diseases and pests. Cuttings obtained from severely diseased plants give lower yield as most of them will sprout with the disease.

5. Time of planting

Although cassava stands drought better than most other crops, time of planting is very important for the crop to give good yield. Cassava stands better adverse weather conditions as well as diseases and pests if planted early in the season. Planting should be through mid January.

6. Crop hygiene

After planting and when sprouting, some of the stands show primary infection or infestation of major diseases or pests. It is advisable to rogue them and replant with clean material in order to avoid the spread of these diseases or pests to other plants. This helps to reduce the incidence of the diseases or pests at later stage when the plants grow up.

7. Weeding

The first two or three weedings during the first three to four months after planting are essential to ensure good cassava growth and thus good yield. Yield loss of up to 80 to 90 percent has been reported where no weeding was done in weedy cassava fields.

8. Disease and pest control

The best way to control major diseases and pests is the use of resistant or tolerant

varieties. However, as of now, these are not readily available to the farmers through the extension service as they become available from research.

The use of disease or pest free planting material helps in reducing the primary infection or infestation of cassava crop in the field.

Roguing at early stage of cassava mosaic virus diseased plants reduces the spread of the disease in the field.

In areas with mealybug infestations, early planting helps to avoid serious plant damage before the crop is ready for harvest.

9. **Intercropping**

With good management, there are little differences in yield between a pure cassava crop and that interplanted with maize. Even farmers benefit more and have better total return from interplanting cassava with maize. Interplant maize with cassava, in an attempt of securing the farmer against drought and famine.

10. **Time of harvesting**

In most areas and with good management, results show that the optimum time of lifting cassava is around 12 to 15 months after date of planting.

Beyond this period, the increase in yield does not justify the cost of locking the land to one crop of cassava for two seasons. Hence the opportunity costs are better where a farmer treats cassava as an annual crop than where it is treated as a perennial crop.

Cassava fields kept for too long are good reservoir of diseases, pests and tuberous root rot. Also the quality of roots of most early and medium maturing varieties often deteriorates after 15 months of growth.

INFORMATION

For further information about cassava husbandry, please contact:

Root and Tuber Crops Team,
Bvumbwe Research Station,
P.O. Box 5748, LIMBE.
Tel: 662 206/662 207/662 216/662 483

Cassava Research Team,
Lunyangwa Research Station,
P.O. Box 59, MZUZU.
Tel: 332 633

Original cover art by Mr. J.W. Mchowa

Reference:

Ministry of Agriculture, 1989; Estimates of Cassava Production in the different Agriculture Development Divisions of Malawi (1988-1990). Unpublished Mimeograph, Department of Agriculture.

Appendix 3

Source: NU LINE FOOD PRODUCTS LTD

The following are the projections of output, revenues, costs and profits for the five years of operation:-

YEARS	0	1	2	3	4	5
Area Planted (Hects)	412	2,060	2,424	2,424	2,424	2,424
Matured Hectares	-	412	2,060	2,424	2,424	2,424
Yield/Hect in tonnes	-	25	35	35	35	35
Output (tonnes)	-	6,180	72,100	85,000	85,000	85,000
REVENUE	-	2,600,000	7,210,000	8,500,000	8,500,000	8,500,000
COSTS						
Fertilizer	45,000	227,000	267,000	267,000	267,000	267,000
Salaries	50,000	50,000	50,000	50,000	50,000	50,000
Wages	90,000	540,000	540,000	540,000	540,000	540,000
Repairs/Maintenance	-	5,000	5,000	5,000	5,000	5,000
Tractor Expenses	24,000	24,000	24,000	24,000	24,000	24,000
Insurance	20,000	20,000	20,000	20,000	20,000	20,000
General Expenses	10,000	10,000	10,000	10,000	10,000	10,000
Training	20,000	20,000	-	-	-	-
Leasing Fees	-	235,000	214,000	194,000	173,000	155,000
TOTAL COSTS	259,000	1,131,000	1,130,000	1,110,000	1,089,000	1,071,000
Gross Profit	(259,000)	1,469,000	6,080,000	7,390,000	7,411,000	7,429,000
Depreciation	-	-	400,000	400,000	400,000	400,000
Profit before interest	(259,000)	1,469,000	5,680,000	6,990,00	7,011,000	7,029,000
Interest	448,000	448,000	448,000	403,000	358,000	314,000
Profit before tax	(707,000)	1,021,000	5,232,000	6,587,000	6,653,000	6,715,000
Tax	-	510,000	1,988,000	3,293,000	3,326,000	3,357,000
Profit after tax	(707,000)	511,000	3,244,000	3,294,000	3,327,000	3,358,000
Dividends	-	255,000	1,622,000	1,647,000	1,663,000	1,679,000
Retained profit for yr	(707,000)	256,000)	1,622,000	1,647,000	1,664,000	1,679,000
Retained profit b/f	-	(707,000)	(451,000)	1,171,000	2,818,000	4,482,000
Retained profit c/f	(707,000)	(451,000)	1,171,000	2,818,000	4,482,000	6,161,000

APPENDIX 4

Source: NU LINE FOOD PRODUCTS LTD

CASSAVA STARCH AND GLUCOSE PROJECT
PROFIT AND LOSS PROJECTIONS
FIGURES IN $000 AT 1990 CONSTANT PRICES

		1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
SALES VOLUME												
Starch(tonnes)		6600	6600	7700	7700	7700	7700	7700	7700	7700	7700	7700
Glucose(tonnes)		3000	3000	3500	3500	3500	3500	3500	3500	3500	3500	3500
INCOME												
Starch	600	3960	3960	4620	4620	4620	4620	4620	4620	4620	4620	4620
Glucose	1200	3600	3600	4200	4200	4200	4200	4200	4200	4200	4200	4200
TOTAL INCOME		7560	7560	8820	8820	8820	8820	8820	8820	8820	8820	8820
PRODUCTION COSTS												
Chemicals(starch)		515	515	600	600	600	600	600	600	600	600	600
Chemicals(glucose)		306	306	379	379	379	379	379	379	379	379	379
Packaging		350	350	367	367	367	367	367	367	367	367	367
Steam		174	174	202	202	202	202	202	202	202	202	202
Electricity		51	51	59	59	59	59	59	59	59	59	59
Water		220	220	258	258	258	258	258	258	258	258	258
Wages and Salaries		246	246	246	246	246	246	246	246	246	246	246
Maintenance		0	50	50	50	50	50	50	50	50	50	50
Insurance		90	90	90	90	90	90	90	90	90	90	90
Transport Cost		100	100	150	150	150	150	150	150	150	150	150
Training		50	50	50	50	50	50	50	50	50	50	50
Depreciation		2159	2159	2159	2159	2159	2159	2159	2159	2159	2159	2159
TOTAL PRODUCTION COSTS		4261	4311	4610	4610	4610	4610	4610	4610	4610	4610	4610
PROFIT BEFORE INTEREST		3299	3249	4210	4210	4210	4210	4210	4210	4210	4210	4210
Interest		1380	1380	1380	1242	1104	966	828	690	552	414	276
PROFIT BEFORE TAX		1919	1869	2830	2968	3106	3244	3382	3520	3658	3796	3934
Tax(45%)		864	841	1274	1336	1398	1460	1522	1584	1646	1708	1770
PROFIT AFTER TAX		1055	1028	1556	1632	1708	1784	1860	1936	2012	2088	2164
Dividends		528	514	778	816	854	892	930	968	1006	1044	1082
RETAINED PROFIT FOR YEAR		527	514	778	816	854	892	930	968	1006	1044	1082
RETAINED PROFIT C/F		0	527	1041	1819	2635	3489	4381	5311	6279	7285	8329
RETAINED PROFIT B/F		527	1041	1819	2635	3489	4381	5311	6279	7285	8329	9411
RETURN ON SALES		0.14	0.14	0.18	0.19	0.19	0.2	0.21	0.22	0.23	0.24	0.25

APPENDIX 5

7 November 1991

Packaging Industries (Malawi) Ltd
P O Box 30533
Chichiri 3
Blantyre
MALAWI

Attention : Quality Manager

Dear Sir

RE: CERTIFICATE OF ANALYSIS

PRODUCT : Starcon 103
Batches 779, 780, 782, 783, 791, 797

DATE OF DESPATCH : 06/11/91

Analysis Results (Average)

1.	Appearance	White
2.	Moisture %	11,3
3.	Protein %	0,44
4.	Oil %	0,53
5.	Ash %	0,20
6.	pH (20% suspension)	5,06
7.	Iron (ppm)	24
8.	Sulphur Dioxide (ppm)	37,07
9.	Particle Size %	0,22

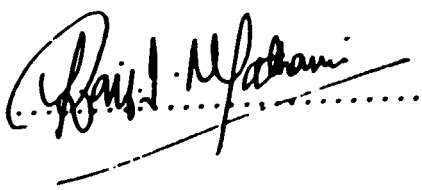
Yours faithfully
FOOD AND INDUSTRIAL

R J MAZHETESE
QUALITY ASSURANCE MANAGER

AU-LINE FOOD PRODUCTS LIMITED

BALANCE SHEET - 30TH SEPTEMBER 1987

	Note	1987 K	K	1986 K	K
EMPLOYMENT OF FUNDS					
FIXED ASSETS	4		306,824		368,568
CURRENT ASSETS					
Stock and work-in-progress	5	391,616		144,554	
Debtors		172,952		12,570	
Unsecured advance	6	-		200,846	
		564,568		357,970	
Less: CURRENT LIABILITIES					
Bank overdraft	7	130,128		49,194	
Bills payable		174,953		484,297	
Creditors		151,223		76,088	
Taxation	8	4,088		8,258	
		460,392		617,837	
NET CURRENT (LIABILITIES)/ ASSETS			104,176		(259,867)
TOTAL ASSETS LESS CURRENT LIABILITIES			411,000		108,701
FUNDS EMPLOYED					
SHARE CAPITAL AND REVENUE RESERVE	9		27,393		(15,520)
UNSECURED LOANS AND ADVANCES	10		383,607		124,221
			K 411,000		K 108,701



.....)
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The accounting policies and notes on pages 5 to 7 form an integral part of these accounts.

Auditors' report - page one.

MU-LINE FOOD PRODUCTS LIMITED

BALANCE SHEET - 30TH SEPTEMBER 1988

	NOTE	1988	
		K	K
EMPLOYMENT OF CAPITAL			
FIXED ASSETS	4		258,442
LIWONDE PROJECT	5		61,409
CURRENT ASSETS			
Stock and work-in-progress	6	642,187	
Debtors		279,349	
		921,536	
CURRENT LIABILITIES			
Creditors		227,008	
Taxation	7	24,420	
Bills payable		134,874	
Bank overdraft	8	95,848	
		482,150	
NET CURRENT ASSETS			439,386
		K	759,237
CAPITAL EMPLOYED			
SHARE CAPITAL & REVENUE RESERVE	9		60,197
DIRECTORS' CURRENT ACCOUNTS	10		22,746
UNSECURED LOANS AND ADVANCES	11		676,294
TOTAL FUNDS		K	759,237

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.....
) Directors

Notes on pages 5 to 7 form part of these accounts.
Auditors' report, page one.

MULTILINE FOOD PRODUCTS LIMITED

BALANCE SHEET - 31ST MARCH, 1989

	NOTE	1989 K	1989 K
EMPLOYMENT OF CAPITAL			
FIXED ASSETS	5		597,723
LIWONDE PROJECT	6		126,153
CURRENT ASSETS			
Stock and work-in-progress	7	707,452	
Debtors		265,737	
		973,189	
CURRENT LIABILITIES			
Creditors		197,129	
Taxation	8	59,980	
Bills payable		543,402	
Bank overdraft	9	134,676	
		935,187	
NET CURRENT ASSETS			38,002
			K 761,878
CAPITAL EMPLOYED			
SHARE CAPITAL & REVENUE RESERVE	10		88,740
DIRECTORS' CURRENT ACCOUNTS	11		44,300
UNSECURED LOANS AND ADVANCES	12		628,838
TOTAL FUNDS			K 761,878

(.....)
(.....) Directors
(.....)

Notes on pages 5 to 7 form part of these accounts.
Auditors' report, page one.

NU-LINE FOOD PRODUCTS LIMITED

BALANCE SHEET AS AT 31ST MARCH 1990

	NOTE	1990	
EMPLOYMENT OF CAPITAL		K	K
FIXED ASSETS	4		641,738
LIWONDE PROJECT	5		1,044,646
CURRENT ASSETS			
Stock	6	739,228	
Debtors		567,256	
		1,306,484	
CURRENT LIABILITIES			
Creditors		491,926	
Taxation	7	72,943	
Bills payable		477,415	
Bank overdraft	8	397,469	
		1,439,753	
NET CURRENT ASSETS			(133,269)
			1,553,115
CAPITAL EMPLOYED			
SHARE CAPITAL & RESERVES	9		222,725
DIRECTORS' CURRENT ACCOU	10		15,466
UNSECURED LOANS	11		533,154
LEASING LIABILITY	12		781,770
TOTAL FUNDS			1,553,115

.....)
.....) Directors
.....)

JOB DESCRIPTION

Title of Post:	International Expert in Marketing. with Particular Reference to
Duration of Mission:	1.25 work-months
Date of Entry on Duty:	ASAP
Duty Station:	Lilongwe and Blantyre, with travel within the country
Purpose of Project:	To undertake a market study for the production of cassava chips and pellets, starch and glucose for local utilization.

Duties and Responsibilities:

The international expert will carry out a market study, in the process of which he will collect data and make an assessment of the market in Malawi, define the products and growth-rate trend of the various markets, of the supply of raw materials and factors which could affect supply and demand in these markets, and investigate legislative, economic and social considerations which could be of importance for the economic success of the project.

The expert will also prepare a producers' analysis, an end-users' analysis and demand forecasts, and prepare an analysis of marketing opportunities and strategies.

The duties and responsibilities of the expert will also include:

- evaluating the potential size of the local market and developing and preparing for implementation the requisite marketing strategy for the company (Nu Line) who are the promotors of the project;

- investigating and quantifying in financial terms the nature of the infrastructural facilities needed for cropping, post-harvest processing, and storing the products to eventually be marketed and developing the requried technical and financial plans necessary for the creation and/or improvement of this infrastructure as necessary; and

- estimating the likely destination of the crops produced by the farms, as well as of the relevant reference prices.

Qualifications: The expert should possess academic qualifications and/or professional experience in marketing as well as at least 10 years field experience in marketing. Previous experience in Africa is essential, and previous experience in the food industry is desirable.

Language: English

Background Information:

Nu Line Food Products Ltd., a local food processor in Malawi, has requested UNIDO to assist them in undertaking a marketing study for cassava. Nu Line is presently a manufacturer of sweets, toffees, chocolates, chewing gum, biscuits, cookies, potato chips and general confectioneries. It is the company's intention to manufacture locally the glucose necessary to produce these products, both because they have encountered many problems with the importation of glucose as well as with the fact that there is a pressing need to save foreign exchange (and potentially to also possibly earn foreign exchange through exporting).

Previous ITC work has recommended follow-up work on the establishment of cassava processing industries and the development of specific export markets and this project will follow these recommendations closely.

Nu Line has been in extensive contact with a number of financing institutions and there is evidence that, were the marketing study to indicate positive economic porspects for the marketing of cassava, that the company could obtain the necessary financing for developing this project further.

Appendix 8

SOURCES CONSULTED/INTERVIEWED/IN BLANTYRE

Malawi Distrilleries
Mr. Irvine, production manager

Universal Industries
Mr. D K Amin, managing director (telphone, 2 conversations)

KK Millers Ltd
Mr. C C Patel, chairman

Grain and Milling Company Ltd
Mr. Nyirenda, stockfeeds manager, nutritionist

Malawi Development Corporation MDC
Mr. Reiner G.T. Eich, general manager

Wood Industries Corporation LTD
Mr. Jerry A.A. Jana, general manager

Valmore Paints (Malawi) (Pvt.) Ltd
Mr. Han (J.A.) Wouters, managing director

Carlsberg Malawi Brewery Ltd
Mr. George T. Jembe, Brewer

Lever Brothers (Malawi) Ltd
Ms. Mkandawire, product group coordinator

Packaging Industries (Malawi) Ltd
Mr. Patrick D. Mukala, stores controller

David Whitehead and Sons, Ltd
Mr. Herrings

Sterling Products International
anonymous, on the phone

ADMARC (purchasing and marketing of agricultural products)
Mr. Sankhani, marketing controller (phone)

Investment and Development Bank of Malawi Ltd.
Mr. Chipasula, general manager

International Timbers Ltd
Assistant ot Mr. Lloyd, general manager (phone)

Customs and Excise Department, Blantyre
Mr. Namulu, Mr Turner (import statistics)

Bwumbwe Research Station
Mr. Sauti, Mr. Chingani
(intercropping experts)

UNDP, Lilongwe
Mrs. Jaana Airaksinen, programme officer

UNIDO, Blantyre
Mr. Adidas Jacob, CTA

NU LINE FOOD PRODUCTS LTD
Mr. Rafiq Nathanie, chief executive
Discussions with personnel and the Nathanie family

Written sources: Books, reports, statistics, plans, budgets etc., mainly from Malawi government officials, FAO and UNIDO/UNDP plus NU LINE documents.