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UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION

VIENNA

PROVISIONAL MILITARY GOVERNMENT OF SOCIALIST ETHIOPIA

Ethiopian Beverage Corporation

ADDIS ABABA

STUDY ON THE REHABILITATION, EXPANSION AND/OR RELOCATION OF EXISTING WINERIES AND THE FEASIBILITY OF ESTABLISHING A NEW ONE (DP/ETH/83/013)

Activity Code: DP/01/31.4

FINAL REPORT

Year 1986

IFAGRARIA s.p.a.
ROME (ITALY)

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I N D E X

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INTRODUCTION

1. The present report refers to the Agreement (UNIDO Contract No. 85/42; Project No. DP/ETH/83/013;Activity Code: DP/01/31.4) signed on 12 July 1985 by the United Nations Industrial Development Organization (UNIDO) and by IFAGRARIA S.p.A., Rome, Italy.
The object of the study - requested by the Government of Ethiopia on behalf of the Ethiopian Beverage Corporation (E.B.C.), a state firm under the control of the Ministry of Agriculture-is the restructuration of the whole Ethiopian wine sector for a further development of the production in better operational condition, with the purpose both to meet the domestic potential demand of wine and to increase export and consequently the foreign exchange inflow.

2. In the period from 2 and 27 september 1985 a team of IFAGRARIA, composed by:

. G. MINI	Financial-Economic Analyst-Team Leader
. J.H. THOMAS	Assistant Team Leader(1st phase)
. A. BATTAZZI	Wine Marketing Expert
. F. BATTISTUZZI	Wine Technologist
. W. BOTTARO	Agronomist and Winery Machinery Expert
. A. PULETTI	Civil Engineer

carried out preliminary studies and surveys on the Ethiopian wine industry,with the kind assistance of the Ethiopian Beverage Corporation (E.B.C.), and visited the 4 existing Wineries (3 in Addis Ababa, and 1 in Asmara), with the purpose to appraise their present situation and recommend their rehabilitation, expansion and/or relocation.
During the mission,the establishment of a new modern winery was also proposed and preliminarly designed.
The agronomist visited also, with the assistance of the Horticulture Development Corporation (H.D.C., a department of the Ministry of Agriculture), two vineyards with the purpose to suggest the most suitable interventions for their further development and expansion.
During this period the team attended several meetings with representative of E.B.C. and H.D.C. to discuss and appraise the interventions and measures proposed by IFAGRARIA experts.
After a final meeting with E.B.C., a brief report containing an outline of team conclusions and proposals was delivered to E.B.C. and the UNIDO Representative in Addis Ababa.

In october 1985 an Interim Report covering field activities and a summary of all interventions on the existing wineries and of the proposed new plant, was also delivered to UNIDO, Vienna.

SUMMARY AND CONCLUSIONS

1. PRESENT SITUATION OF THE ETHIOPIAN WINE INDUSTRY

Grape cultivation was introduced in Ethiopia since many decades by expatriates coming from mediterranean countries. Climate and soil conditions were quite favorable and vineyards spread in the most suitable areas (Zeway, Guder, Debra Zeith, Nura Era, Elabored, etc.).

Three wineries were established in Addis Ababa and one in Asmara.

Starting from 1975 all wineries were transferred to the State ownership and continued producing with local staff, under the management of the Ethiopian Beverage Corporation (E.B.C.). Due to the rapid decrease of grape cultivation, the E.B.C. factories raised the use of imported dry raisin as wine input and increased, at the same time, the production of beer, mineral water and other soft drinks, liqueurs and aperitives.

At present, wine production, practically almost made from dry raisin, represents less than 15% in value of the total sales.

Present overall wine output is around 9.5 million litres, distributed as follows:

. Awash Lideta Branch	5.5 million litres
. Addis Ketema Branch	2.2 million litres
. Awash Makanissa Branch	1.2 million litres
. Asmara Wine Factory	0.6 million litres

Wine is sold on the domestic market: exports of better quality of wine are very modest. A reasonable further development of these sales can be granted only if wine will be exclusively produced with fresh grape.

In the last years Ethiopian Wineries reached their maximum productive capacity, so they are no more in the condition to cover the potential demand, which appears to be far higher.

The main constraints for a further increase of wine output can be summarized as follows:

a) on the processing stage:
   - low efficiency of the existing plants and equipment, most of which are old, obsolete, or out of order; maintenance and interventions are hindered by the unavailability of spare parts;
   - increasing annoyance connected with the plant layouts, storage facilities, insufficient room and consequent growing was stage levels;

b) on the management and organizational sector:
   - inadequate price and market policy aiming to increase at least domestic sales, since a reasonable development of exports will be almost totally connected with a growing availability of fresh grape;
   - scarce interrelation between grape production sector and wineries.

2. PRESENT SITUATION ON GRAPE CULTIVATION

In 1985 the grape output of the Ethiopian vineyards was reported around only 450 t, out of which 350 were used by the wineries, not for vintage wine production, but as an yeast for production of wine from imported dry raisin.

However climate and soil condition must be considered quite suitable for a considerable future expansion of the grape production. The enologist expert of IFAGRARIA pointed out the most relevant lacks in the present cultivation techniques: different kinds of vines in the same vineyard; improper pruning techniques; poor care in weeding; insufficient or not correct anticryptogamic treatments; scarce fight against birds destroying harvests, etc.

The target of the 10-year Perspective Plan is to reach a production of about 3,000 t of grape within 1993/1994. But the above mentioned expert is of the opinion that this goal could be by far overcome, especially in the long term, should all new suggested techniques be duly applied with the support of H.D.C. staff and eventual extra technical assistance.

3. MARKET TRENDS

The planned development of the wine production, through a whole restructuration of the sector,will of course be connected with the forecast of total wine demand (domestic consumption, plus possible export) in the short, medium and long term.

The projections of the potential domestic demand - based on the population growth rate, a progressive increase of the per caput wine consumption stimulated by planned or assumed lower sale prices of wine and/or expected average high incomes - and of the exports, gave the following results (000 hl):

	1990	1995	2000
. Domestic demand			
.. low hypothesis	140.9	188.7	227.7
.. average-high hypothesis	151.8	209.7	250.9
. Exports			
.. low hypothesis	13.5	27.1	35.5
.. average-high hypothesis	13.5	29.5	40.0
. Total demand			
.. low hypothesis	154.4	215.8	263.2
.. average-high hypothesis	165.3	239.2	290.9

As regards projections of grape and grape wine output, the results are the following (000 q or hl):

	1990	1995	2000
. Grape production			
.. low hypothesis	32.5	60.0	75.0
.. average-high hypothesis	35.8	71.6	90.0
. Corresponding wine production (1)			
.. low hypothesis	17.9	33.0	41.3
.. average-high hypothesis	19.7	39.4	49.5

(1) According an extraction rate from grape of 55%,out of which 40% of high quality wine and 15% of lower quality wine.

It is worth observing that, according these assumptions, expected exports would be totally covered with fresh grape wine; the share of grape wine not exported would be sold in the domestic market (high income classes, hotels, restaurants, etc.).

4. GENERAL OUTLINE OF THE PROPOSED INTERVENTIONS

The proposed interventions have been strictly connected with the above projections at short, medium and long term, that is in order to put the newly structured wine industry in the condition to meet both the expected domestic consumption levels and exports, so achieving the most important project objective.

The actions, suggested after a technical and economic appraisal of the present operational conditions of each existing plant, here reminded, are summarized as follows.

Awash Addis Ketema Winery

Present situation

Nearly all the fermentation and storage vats and a considerable part of the equipment (presses, refrigeration unit, etc.) are in bad condition or out of order. Bottling and other processing stages are carried out by hand.

Buildings and the enologic cement vats need integration, restructuration and repair works.

Utilities (power, water and sewerage networks) need to be up-dated and revised; external ar s to be settled up.

There is also a chronic lack of room for storage movement and handling of goods.

In one word, winery activity is carried out only through continuous and expensive (but not very effective) maintenance of all its capital goods.

Proposals

Theoretically the winery could be wholly rehabilitated or relocated. However this operation does not appear to be feasible from the economic point of view, so its closure is suggested, also in view of the planned establishment of a modern new winery.

Awash Makanissa Winery

Present conditions

They are similar to those referring to Ketema factory, taking also into account the age of its building (1918, 1957) and of a large part of its equipment.

Proposals

In order to face the wine domestic consumption during the erection of the new winery - taking also into account that Ketema factory will be closed - Makanissa plant will continue producing using new equipment temporarely supplied and afterwards transferred to the new winery.

Awash Lideta Winery

Present situation

It is the most important winery and acts as a technical, commercial and productive coordination centre for the remaining Addis Ababa wineries.

A good part of the existing equipment is in good condition, others need repair and extra-maintenance works. Buildings are adequate: some revision and integration works are necessary.

Proposals

The winery will become a bottling Centre for fine wines to be exported or sold in the country, together with the most common wines.

With this purpose, the plant will be partially restructured and provided with additional modern equipment, especially for wine refri-

geration, microfiltration and bottling,and for a more rational conveyance and handling systems.

Other interventions will regard buildings, external areas and utilities.

Asmara Wine Factory

Present condition

The winery is producing wine (only from dry raisin) using old fashioned equipment, with scarce possibility of maintenance (lack of spare parts). So too many operations are carried out by hand, including bottling and bottle washing.

Buildings and utilities are generally in good condition.

Proposals

The winery will be partially rehabilitated and integrated in order to enable it to produce and bottle wine for the Eritrea market; in the medium and long term its output can double.

The factory will be supplied with a new wine-making line (in red and white), for a capacity of 100-150 hl/h and a new bottling line for a capacity of 1,500 litres/h.

Additional civil works are foreseen for an improvement of buildings, external areas and services.

The new winery

The new winery will be established in a suitable area of 50-60,000 sq.m. in Addis Ababa or its surroundings, provided with the required technic and social infrastructure.

The new plant will be established in the following stages:

- acquisition of the area;
- erection of the factory based on a modular system; the first module will have a production capacity of 150.000 hl/year of wine and a stocking capacity of 65,000-70,000 hl;
- installation of a modern bottling line, with a capacity of 8,000 litres/hour;

- successive enlargements (further modules), constantly related to the wine production program, and concern the grape reception section. the wine-making section and the containers section; in particular:
  - .. in order to avoid further enlargements for grape reception and handling, it was proposed the progressive creation, at the main vineyards, of little centres for must preparation, in order to transfer must, and not grape, to the wineries;
  - .. additional, external lines of stainless steel vats, each of a capacity of 25,000 hl, will be also progressively erected.

Proposals on market and price policy

A complete market study, with careful analyses on domestic sales and possible exports was undertaken. Particular suggestions were given for a more efficiency of the managerial staff, especially with the purpose to support wine sales (marketing systems, promotion, etc.).

Proposals on training and technical assistance

Taking into account that the new winery - but also Lideta and Asmara factories - will operate using equipment newly supplied, the Consultant recommends the training of Ethiopian personnel in Italy, to be carried out at a qualified Enologic Institute and at a modern winery (as a minimum program 5 Ethiopian enotechnicians for a period of 2 months is suggested). In the different case a longer training period would be necessary (4 - 6 months).

Morever it was proposed the technical assistance of 2 Italian experts during erection and assembling of the new winery (about 12 months) and in the first 6 months operation.

5. INVESTMENT

Final cost

The forecast investment costs are summarized below (in 000 B):

. New Winery, first module	14,276 (1)
. New Winery, enlargements	2,452
. Lideta Winery (restructuration)	3,033
. Makanissa Winery (temporary rehabilitation)	4,143 (1)
. Asmara Wine Factory (rehabilitation and integration)	3,485
. "Musting" Centre (n. 4)	807
. Cost for equipment exchanges between wineries	270
. Technical assistance	294
. Training	53
. Preliminary expenses	140
Total	**28,953**

correspondent at about 14 million US Dollars.

The break down of investment costs by sector is the following (000 B):

. Area settlement and other civil works	608
. Buildings (new plant)	4,697
. Interventions on existing buildings	633
. Machinery and equipment, incl. ancillary	18,917
. Repair and extra maintenance of existing equipment	151
. Vehicles (internal, external)	980
. Spare parts (strategic stock)	1,591
. Furniture and other non-technologic equipment	619
. Other costs (equipment exchange, T.A., training, preliminary: as above)	757
Total	**28,953**

(1) Value of equipment temporarely supplied to Makanissa Winery and transferred to the New Plant: 2,980.

Investment's final cost includes: transport cost of impor - ted capital goods to Assab, custom duties and taxes, landing and harbour costs, warehousing costs, inland transport, assembling and running - in costs. Contingencies ("physic") of about 10% were applied to all items.

Time-schedule of interventions and payments

The interventions calendar is the following:

1st project-year (1)

- Interventions on all existing wineries;
- Erection of the new plant (civil works).

2nd project-year (1988)

- Erection of the new plant (follow) and equipment assembling;
- Transfer of equipment from Makanissa to the new plant and other equipment exchanges;
- Creation of a first "Musting" Centre;
- Technical assistance (first expert);
- Training

3rd project-year (1989)

- Technical assistance (2nd expert);

5th, 8th and 12th projects-years (1991, 1994, 1998)

- Enlargements of the New plant (new storage vats lines).

9th, 10th and 12th project-years (1993, 1996, 1998)

- Creation of other three Musting Centres.

Time schedule of payments, according the effective cash re - quirements, is:

Project years	**Final cost (000 B)**
1 (1987)	15,402
2 (1988)	9,651

(1) Assumed to be 1987, since the productive program must be directly connected with wine estimated demand projections. Consequently any delay in starting implementation would cause a shifting of the investment program.

Project years	Final cost (000 B)
3 (1989)	845
5 (1991)	817
7 (1993)	202
8 (1994)	817
10 (1996)	202
12 (1998)	1,019
Total	**28,953**

Investment payable in foreign currency

It was calculated that about 19.5 million Birr (equivalent to around 9.4 million US $) are payable in foreign currency (67.3% of total investment cost).

Working capital

The working capital, as a balance between current active (debtor accounts, stocks) and current passive (creditor accounts) was estimated - after the calculation of the operating costs - at 3.3 million Birr required in the first year project and 4.3 million Birr for further increases, so 7.6 million Birr in total.

6. ANNUAL OPERATING COSTS

Operating costs and all successive financial and economic analyses have been referred to the whole, consolidated project, taking into account the planned strict operational interdipendence between the restructured units and the new winery (Makanissa winery will produce only for 2-3 years with new equipment temporarely supplied; Lideta Winery will become a subsidiary bottling unit of the new plant, so its production will be constantly carried out in co-ordination with new plant activity).

The operating costs (from 1987 to 2000) have been calculated year by year, being directly connected with the wine production program, at its turn planned on the basis of the projected total demand for wine.

The greater part of costs are variable and therefore related to the production levels.

In the project last year (2000) the distribution of these costs will be as follows:

	000 B	%
. Raw and auxiliary material (fresh grape 15.1%, dry raisin 6.9%, sugar 7.9%, etc.)	17,491	32.6
. Packaging material (bottles 20.7%, corks, caps etc.)	22,043	41.2
. Utilities (energy, water)	593	1.1
. Fuel, oil and other consumption products	981	1.8
. Personnel	1,245	2.3
. Overheads (prcduction and administration)	1,490	2.8
. Maintenance	988	1.8
. Sales and distribution costs	4,300	8.1
. Other costs and contingencies (≈ 5%)	2,402	4.5
Total, before depreciation	**51,533**	**96.2**
. Depreciation	2,044	3.8
Total	**53,577**	**100.0**

It was estimated that about 12% of the operating costs are payable in foreign currency (dry raisin, chemicals, etc.).

7. SALES

The development of wine sales during the project life corresponds to the forecast demand for domestic consumption and export, according the average-high hypothesis shown in point 3.

Exports are represented by sales of wine only made with fresh grape and at competitive prices, the two main conditions to gain the foreign markets and to improve the image of Ethiopian wines.

Wines on the domestic market will be sold according 4 classes of kinds and prices.

Total project receipts include the sale of by-products (exhausted pomace and lower kind of wine destinated to distilleries), representing 1-2% of the receipts.

Total project receipts would reach, in the year 2000, 70.1 million Birr, out of which 18.2 million representing an inflow of foreign currency.

8. ECONOMIC RESULTS

The financial and economic feasibility of the consolidated project has turned quite positive. It was evaluated through the following methods or parameters:

a) **the cost/benefit analysis,** as the current commercial marge: from 18.7% to 26.5% before depreciation and from 12.7% to 23.6% after depreciation (and before interest and tax) during the project life (1987-2000);

b) **the accounting rate of return,** as the relationship between gross profit and investment: from 18.5% to 43.6% and from 12.4% to 38.8%, respectively before and after depreciation;

c) **the internal rate of return** (discounted cash flow): 26.4%;

d) **the recoupment period** (or pay - back period): 3.2 years.

The sensitivity analysis showed that the favourable financial results of the project are satisfactorily protected by evaluation errors.

It was also demonstrated that the project can be financed with external sources (65-70% of total investment cost, including working capital) according current conditions, since the loans (capital and interest) could be covered with the annual cumulated profits generated by the consolidated project (1).

Also by the economic point of view (effects on the country balance of payment and national budget), the project must be retained quite satisfactory. During project assumed life (1987-2000) there would be nearly a balance between exchange inflows and outflows, whereas there would be a growing surplus in the following period (2).

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(1) According a "standard" financing schedule, the net rate of return of the project would be around 17%.

(2) As a matter of fact an yearly surplus could be obtained on an average, starting from the second half of the project life.

1. ETHIOPIAN SOCIO-ECONOMIC BACKGROUND

1.1 PHYSIC FEATURES

Ethiopia has an area of 1,235,000 sq.km, distributed as follows: cultivated land: 11%; permanent pasture and meadows: 37%; woods and forest: 22%; non-productive: 30%. Theoretically arable land is estimated at 60%. Climate is influenced by the altitude: temperate in the Central Plateau (average height between 1,800 and 2,600 m.), tropical in the lower regions, towards Somaliland, Kenya and Sudan; so the average temperature is around 16° in Addis Ababa (m. 2,450) whereas in Massawa varies from 25° to 40°. Rains are frequent and regular in the Plateau (above 1,300mm), during spring ("small rains") and especially in summer time; of tropical kind, rather irregular and less abundant in the lower lands.

1.2 POPULATION

In May 1984 (last National Census) population of Ethiopia was of 42,020,000. The annual rate of growth during the last 5 years was estimated at 2.9% (1). Female population was slighty higher (50.2%); urban population was estimated at 11.3%. Economically active population corresponds to about 55% of total. Active population 65% of total active.

The territory is divided in 14 Regions (see Map, Fig. 1) Addis Ababa - in the Shewa Region (20% of the total population) - has about 1.5 million inhabitants (Tab. 1).

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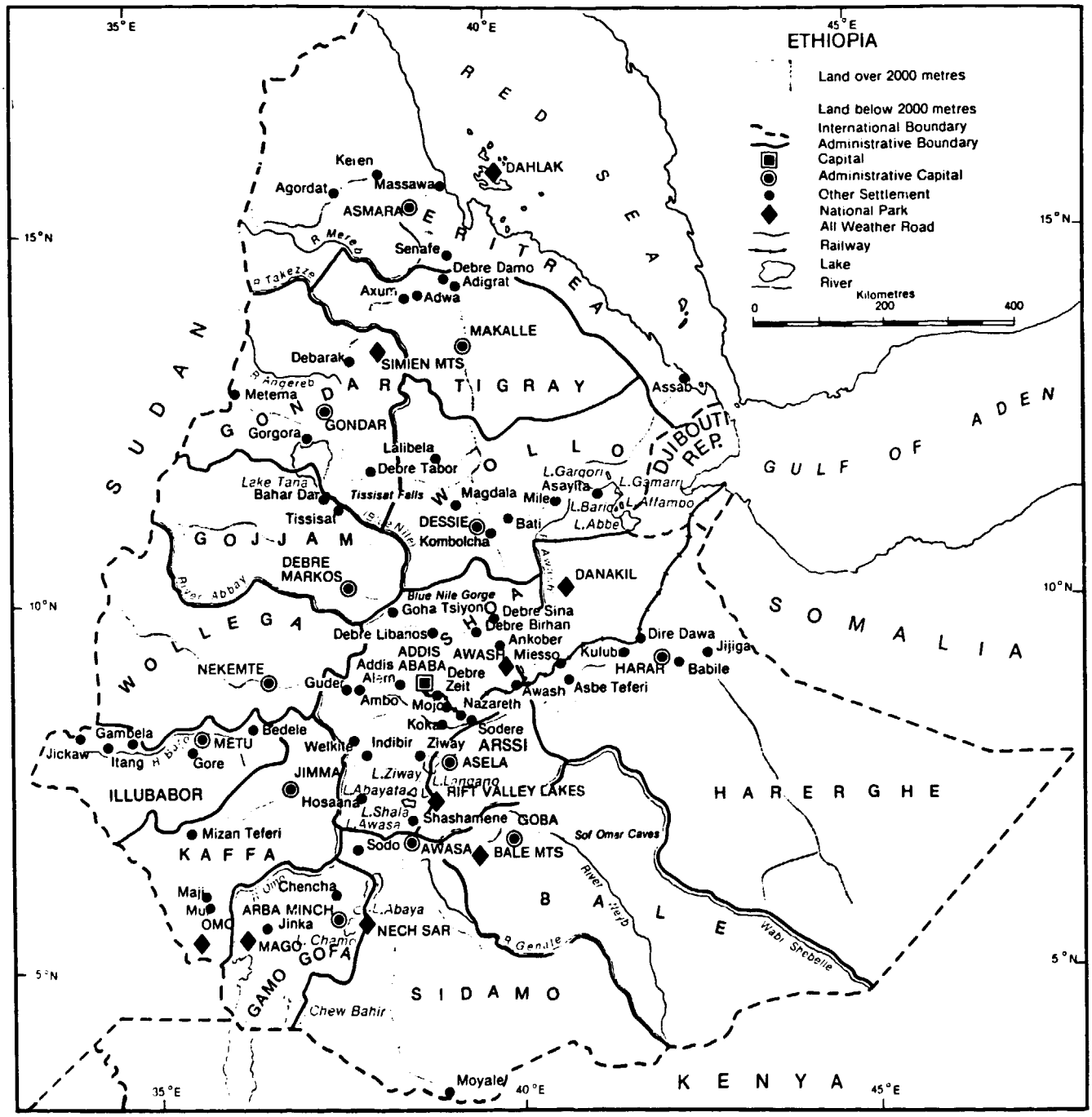
(1) As regards this level there are considerable discrepances (World Bank, F.A.O.) also because in the previous years no complete Census was carried out.

Fig. 1

MAP OF ETHIOPIA



Tab. 1 - TOTAL POPULATION OF ETHIOPIA BY SEX, REGION, URBAN AND RURAL - MAY 1984 (National Census)

	POPULATION								
	TOTAL			URBAN			RURAL		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
. Arusi	823.788	835.445	1,662.233	61.720	71.415	133.135	762.068	767.030	1,529.098
. Bale	497.114	509.377	1,006,491	35.759	41.448	77.207	461.355	467.929	929.284
. Gamo-Goffa	621.915	626.119	1,248.034	35.283	37.970	73.253	286.632	588.148	1,174.781
. Gojjam	1,622.004	1,622.878	3,244.882	116.004	147.383	263.387	1,506.000	1,475.495	2,981.495
. Gondar	1,471.033	1,434.329	2,905.362	92.279	128.283	223.562	1,375.754	1,306.046	2,681.800
. Eritrea	1,302.200	1,312.500	2,614.700	184.762	222.333	407.095	1,117.438	1,090.167	2,207.605
. Harar	2,106.218	2,045.488	4,151.706	149.597	165.004	314.601	1,956.621	1,880.484	3,837.105
. Illubabor	472.610	490.717	963.327	32.276	33.895	66.171	440.334	456.822	897.156
. Keffa	1,224.646	1,225.723	2,450.369	72.378	78.461	150.839	1,152.268	1,147.262	2,299.530
. Shewa	4,015.117	4,075.448	8,090.565	347.774	401.488	749.262	3,667.343	3,673.960	7,341.303
. Sidamo	1,899.012	1,891.567	3,790.579	121.409	127.769	249.178	1,777.603	1,763.798	3,541.401
. Tigray	1,219.800	1,189.900	2,409.700	85.836	112.198	198.034	1,133.964	1,077.702	2,211.666
. Wellega	1,168.884	1,200.793	2,369.677	69.317	74.059	143.376	1,099.567	1,126.734	2,226.301
. Wello	1,788.767	1,821.151	3,609.918	109.947	140.196	250.143	1,678.821	1,680.955	3,359.775
. Assab Adm.	45.000	44.300	89.300	15.623	15.414	31.037	29.377	28.886	58.263
. Addis Ababa	670.169	742.406	1,412.575	670.169	742.406	1,412.575	-	-	-
T O T A L	**20,956.670**	**21,071.141**	**42,019.418**	**2,203.133**	**2,539.722**	**4,742.855**	**18,745.144**	**18,531.419**	**37,276.563**

NOTE: The Rate of growth is 2.9% (last 5 years).

SOURCE: Office of the Population and Housing Census Commission.

1.3 ECONOMIC RESOURCES

Agriculture remains the most important sector in the Ethiopian economy (about 47-48% of country G.D.P.). The kind of cultivation varies according to the different height bands and rain regime. So in the lower lands (called "kwola") the main crops are: millet and sorghum, maize, cotton, tobacco. The high planes (called "voinah degar") are suitable for about all other crops: pulse, oilseeds, vegetables, fruits, wheat, coffee, etc.

The highest lands are partially suitable for natural pastures.

Cereals are widely cultivated, especially maize, millet, sorghum and barley (partially used for beer production). Wheat is also grown but imports are necessary to cover domestic consumption.

Pulses (beans, peas, lentils, etc.) and oilseeds (sesame, rape, safflower, melon, etc.) are also spread, especially in the Central Plateau, and exported.

The production of vegetables and fruits has declined especially in certain regions, so the overall output does not meet the demand.

Coffee represents by far the most important export crop (60% of total export), therefore basic for the Ethiopian economy.

Sugar (from cane Estate at Wonji) meets national requirements and is also exported.

The cultivations of cotton, even through ups and downs, due to climate and other constraints (including world market trends), is still active and in the last years exports were growing.

Grape production, although never significant, declined if compared with that obtained in the past. A compaign for a further development is in course.

Animal breeding is spread in many regions.

Hides and skins are widely exported (about 10% in value of total exports).

In the last decade Ethiopian agriculture, especially in the low lands and in some regions, suffered from drought (scantly fought off) and other constraints, so many farmers quitted their lands.

Manufacturing activities represent only 7-8% of the G.D.P.(10-11% including handicraft). The main productions are: textiles, sugar , preserved food and other food little industries, beverages (wine, beer , mineral water and soft drinks), cigarettes, cement, glass, paper, leather and shoes. In the most recent years refining of petroleum showed an appreciable increase.

Electric power (hydro and thermo) is also growing, thanks to higher oil availability.

Tertiary activities, including public administration, contribute with 36-37% to G.D.P.

In 1983/84 the *G.D.P.*, at current factor cost,was estimated at 9,413 million Birr (10.5 billion Birr at current market prices). The annual average growth rate of G.D.P. in the period 1977-1984 is 6.3%. At constant prices this rate was estimated at 2.9% (Tab. 1 , Annex 1).

1.4 FOREIGN TRADE AND COMMERCIAL BALANCE

The Ethiopian commercial Balance was constantly in deficit . In 1983 (1) the balance was of -968 million Birr (import 1,813 million , export 845 million Birr).

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(1) Data referred to 1984 are still under revision.

30% of import are represented by consumption goods (food, beverage, tobacco, clothing and textiles, etc.), 70% by capital goods and durable consumption goods (33% machinery, equipment, vehicles; 20% crude oil and products; 9% chemicals and para chemicals; 8% metal and metal products).

Coffee was always the most important exported product (62.5 % in value, of total export in 1983), followed by hides and skins (10.1%) , oilseeds and cakes (3.9%), chat (3.4%), pulses (2.9%), canned and frozen meat and live animals (2.4%), sugar (1.0%), spices, incense, beeswax,etc.

Key objective for the Government is to increase export in order to reduce deficit and procure additional foreign currency and consequently to slacken total external debit (Central Government, State enterprises, private sector).

1.5 BALANCE OF PAYMENTS

The last revised Balance of Payments of Ethiopia refers to 1983.

To the deficit of commercial balance also the net total of services are negative, due especially to payment of freight and insurance on trade.

The overall deficit represented by "net goods and services " (about 1,150 million Birr) is not partially counterbalanced by net private transfers and long-term public loans.

In 1983 the balance of payment showed a deficit of more than 350 million Birr (see Tab. 2).

Tab. 2 ETHIOPIAN BALANCE OF PAYMENTS - 1983 (1)

I T E M S	MILLION B
1. Trade balance	- 977.1
. Export (F.O.B.)	833.4
. Import (C.I.F.)	- 1,810.5
2. Net services	- 171.9
. Freight and insurance on trade	- 266.7
. Travels	9.8
. Other transportation	65.2
. Government (N.I.E.)	32.5
. Investment income	- 17.3
. Other services	4.6
3. (1+2) Net goods and services	- 1,149.0
4. Private transfers (net)	518.0
5. (3-4) Current account balance	- 631.0
6. Non monetary capital	368.4
. Public loans long-term	386.7
. Public loans short-term	- 18.3
7. Errors and omissions	- 89.6
8. Reserves revaluation	-
9. S.D.R. allocation	-
10. Balance (5 to 9)	- 352.2

(1) Revised

Source: National Bank of Ethiopia - Quarterly Bulletins

1.6 PRICES TREND

In the last decade (1974-1983) the official general index of the retail prices in Addis Ababa, base 1963 = 100, attained the level of 394.6 in 1983, so with an average yearly increase of 7.1%. Index for food (weight 57%) was 470.7, with an annual growth rate of 8.1%.

In the first years of this period (1975-1979) the average increase was 18.8% yearly, in the last years (1979-1983) of only 3.9%.

In the food sector the rates were 23.1% and 4.1% respectively.

The declining trend in retail prices followed in the first quarter of 1984.

During the recent years the overall annual inflation rate general used for short and medium term contracts or economic studies, has been indicate by international advisers in Ethiopia at 8%.

1.7 OBJECTIVES OF THE NATIONAL ECONOMIC PLAN

The Ten Year Perspective Plan (1984/85-1993/94) is the main governmental document aiming to a more rapid economic development in Ethiopia.

Industry has been given priority second only to agriculture . By the end of the Plan period, industry is expected to contribute 23.9% to G.D.P., whereas the share of agriculture would decline to 39.1% (1).

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(1) In 1983/84 the contributions were 15.7% and 47.8% respectively (in the industrial sector building-construction and electricity-water were included).

The main objectives in the industrial sector are the follo - wing:

- meet domestic demand in the basic commodities sector;
- strengthen handicraft and small scale industry;
- strengthen linkages with agriculture and construction sectors;
- increase availability of building materials;
- lay the basis for heavy industry;
- increase foreign exchange;
- increase employment;
- contribute to a balanced regional development.

The strategies to be adopted in the Plan to achieve the above objectives are listed in the Annex 2.

As far as the present project is concerned, it is worth pointing out the strategies planned as regards: the increase of utilizable capacity in all industrial plants, the increase of the investment, the im - port substitution by domestic production, the research for an improvement of engineering and technologies and the co-operation with foreign investors.

2. THE WINE INDUSTRY IN ETHIOPIA

2.1 BACKGROUND

2.1.1 General information

The enology activity in Ethiopia has been carried out for several decades.It was launched by expatriates coming from Mediterranean countries where grape cultivation is wide spread, like in Italy and Greece.

The favourable climatic and soil conditions and the positive reaction of the local market,allowed these initiatives to gain success in the following years and therefore to increase production.

Vineyards were planted in the most suitable areas (Zewai, Guder, D Zeith, Nura Era, Elabered, etc.).

The wineries were established in Addis Ababa and Asmara, both for infrastructural reasons (availability of all relevant services, facilities and qualified manpower) and market advantages.

Starting from 1975 all wineries were transferred to the State ownership and continued producing, with local staff, under the management of the Ethiopian Beverage Corporation, a division of the Ministry of Industry.

At present E.B.C. factories produce, bottle, and sell also beer, mineral water and other soft drinks, liqueurs and aperitives. Wine output represents only 6-7% in value of the total sales.

Wine production is concentrated in 4 factories: three in Addis Ababa (Awash Lideta Branch, Addis Ketema Branch and Awash Makanissa Branch), and one in Asmara (Asmara Wine and Liqueur Factory).

Also these factories produce, in addition to wine, vermouth, sparkling wine, liqueurs, vinegar and soft drinks (Tab. 3).

ETHIOPIAN BEVERAGES CORPORATION

Tab. 3 - SALES OF BEVERAGES BY VOLUME AND VALUE , 1980/81 - 1983/84

ITEM	UNIT	1980/1981		1981/1982		1982/1983		1983/1984	
		Quantity	Value (000 B)	Quantity	Value (000 B)	Quantity	Value (000 B)	Quantity	Value (000 B)
- Mineral water	000 bottles	27,542	5,303	28,278	6,342	30,776	7,251	29,131	6,672
- Soft drinks	000 cases	8,788	47,544	8,790	56,096	9,207	60,459	10,804	70,296
- Beer	000 litres	59,928	138,138	61,863	144,844	64,544	152,974	65,715	164,771
- Wine	000 "	7,994	15,565	7,739	15,668	8,885	17,729	8,681	17,944
- Liqueurs, alcohol	000 "	3,900	28,989	4,607	32,778	5,282	42,118	6,166	52,005
TOTAL	x	x	**235,539**	x	**255,738**	x	**280,531**	x	**311,688**

Note Not included: imported beverages and those of private undertaking.

Source: E.B.C. (Ethiopian Beverage Corporation)

Present overall wine output is around 9.5 million litres (1984/85) distributed as follows:

- Awash Lideta Branch 5.5 million
- Addis Ketema Branch 2.2 million
- Awash Makanissa Branch 1.2 million
- Asmara Wine Factory 0.6 million

According to information provided by the E.B.C., total personnel employed is about 700.

Due to the low volume of fresh grape coming from the Ethiopian vineyards (about 400 tons), wine is made, therefore, mainly from imported dry raisin.

Naturally, this represents one of the major constraints as regards the standard quality of wine. As a matter of fact Ethiopian wine is sold in total on the domestic market, since exports of better quality wine are very modest and mainly carried out on the basis of trade protocol agreements.

However vineyards output, thanks to the programme set up by the Horticulture Development Corporation-H.D.C.(depending from the Ministry of State Farms), is expected to increase steadly in the immediate future. The Ten Year Indicative Plan foresees a production of around 3,000 tons of grape per annum within ten years. But the latest research has indicated that higher yields (between 4,000 and 5,000 tons) could be achieved in the same period on condition that better cultural techniques will be followed and the assistance of highly qualified experts.

According to the IFAGRARIA experts better results in the production of higher quality wines could be achieved also through a more coordinate policy between E.B.C. and H.D.C.

2.1.2 Main data on production and market (^)

2.1.2.1 Wine production

According to data provided by E.B.C. production of wine in Ethiopia reached, in the last year (1984/85), as previously stated, a total of 9.5 million litres, with 8.9 million from the three Addis Ababa Wineries, and 0.6 million litres from Asmara Wine Factory.

Sales, net of waste and lossess, amounted to about 8.9 million litres for a value of 18.5 million Birr.

During the last 4 years wine production increased only by 8.6% (average 2.8% yearly). Accordingly to market research, the potential domestic demand or consumption capacity is higher and growing due to the double effect of Ethiopian population and per caput consumption increase.

However, the Ethiopian wineries are not in the condition, with their present technologic and organizational structures, to develop any longer their production in order both to meet the domestic demand and increase exports up to more reasonable levels.

According the 10 year Indicative Plan, a first new winery would be realized in 1988/89 (initial capacity 3 million litres, final capacity 5,7 million litres) and a second winery in 1993/94 (initial capacity 3 million litres).

The corresponding wine production would remain about at the present level in the period 1984/85-1988/89, reaching 11.7 million litres in 1989/90 and 14.7 million litres in 1993/94(see Tab. 4).

(^) Due to some discrepancies issued between data supplied by the single factories during the visit of IFAGRARIA team,and data provided by E.B.C., the latter (officially delivered to the project Team Leader) are reported here. Other differences, which are not important, stem from the fact that existing statistics are based either on Ethiopian or Gregorian Calendar, or either on calendar or agricultural year.

Tab. 4 - 10-YEAR PERSPECTIVE PLAN OF WINE : PRODUCTION AND EXPORT (000 litres)

YEAR	PRODUCTION	EXPORTS
1984/85	8,800	575
1985/86	8,800	661
1986/87	8,800	760
1987/88	8,800	874
1988/89	9,000	1,005
1989/90	11,700	1,156
1990/91	11,700	1,329
1991/92	11,700	1,529
1992/93	11,700	1,758
1993/94	14,700	2,022

2.1.3 Market

Almost all the wine (98% in 1984/85) is sold in the domestic market, in bottles or straw covered flasks. About 75% of the product is destined to Addis Ababa, Shoa Region and most of the nearer southern regions. In these markets deliveries are made directly to the customers by personnel (salesmen-drivers and sales helpers) and transport (vans, trucks, trailers) owned by the wineries. Sales in other regions are carried out through external sale agents.

The distribution of the domestic sales, by region and kind of wine, is shown in the Table 5.

"Sariss",in bottles of 0.900 and 0.750 litres, is the cheaper kind of wine and therefore the more marketed.

Unit prices per bottle of 0.750-l to the customer vary from a minimum of 1.50 Birr ("Sariss") to 4-5 Birr for best quality wines (Dukam, Kamela, Christal, Abadir).

Exports appear to vary considerably from one year to another. Between 1978 and 1983 yearly sales shifted from 4,000 to 22,000 litres (Kenya being the major and practically the unique importer). In the last three years exports grew to 170-190.000 litres per year, thanks to bilateral agreement with Germany D.R. and URSS. Data on exports are shown in the Table 6.

According to the indicative targets of the 10-year Plan, wine exports would reach about 1.1 million litres in 1989/90 and over 2 million litres in 1993/94.

For major details see Chapter 3, where a complete market study, with demand projection for the next 5,10 and 15 years, has been undertaken.

ETHIOPIAN AWASH WINERIES

Tab. 5 – SALES OF WINE ON THE DOMESTIC MARKET BY FACTORY AND REGION 1983-1985 (^)

(000 Bottles)

REGIONS	1983				1984				1985				REGIONAL DISTRIBUTION (%)		
	LIDETA	KETEMA	NAKANISSA (^^)	TOTAL	LIDETA	KETEMA	NAKANISSA	TOTAL	LIDETA	KETEMA	NAKANISSA	TOTAL	1983	1984	1985
- Addis Ababa	2,010	866	309	3,185	1,576	675	712	2,963	1,665	586	719	2,970	35.0	30.9	29.3
- Shoa	893	765	311	1,969	903	761	443	2,107	1,088	593	509	2,190	21.6	22.0	21.6
- Harar	699	64	29	792	1,141	-	139	1,280	1,028	-	-	1,028	8.7	13.4	10.1
- Wollo	491	337	9	837	385	528	20	933	703	607	5	1,315	9.2	9.7	13.0
- Assab	45	159	-	204	57	115	19	191	308	82	-	390	2.2	2.0	3.8
- Sidamo	541	169	-	710	176	396	120	692	291	415	225	931	7.8	7.2	9.2
- Arusi	145	95	10	250	264	32	24	320	275	5	-	280	2.7	3.3	2.8
- Keffa	149	17	-	166	146	52	10	208	214	118	16	348	1.8	2.2	3.4
- Welega	361	1	48	410	177	-	77	254	129	79	42	250	4.5	2.7	2.5
- Gemu-Gopa	64	78	29	171	94	68	-	162	118	13	-	131	1.9	1.7	1.3
- Other	305	91	23	419	356	62	50	468	123	113	69	305	4.6	4.9	3.0
TOTAL	**5,703**	**2,642**	**768**	**9,113**	**5,275**	**2,689**	**1,614**	**9,578**	**5,942**	**2,611**	**1,585**	**10,138**	**100.0**	**100.0**	**100.0**

(^) Asmara Wine Factory is not included. Sales in 1985 were estimated at about 850,000 bottles. Total sales would reach therefore around 11 million bottles.
(^^) 9 months

SOURCE: E.B.C.

Tab. 6 - ETHIOPIAN EXPORTS OF WINE (1978-1985)

YEAR	QUANTITY (litres)	AVERAGE PRICE (US$)	VALUE (US $)	IMPORTING COUNTRIES
1978	4,500	1,533	6,900	Tanzania
1979	n.a.	n.a.	n.a.	n.a.
1980	4,050	1,099	4,450	Kenya
1981	4,050	1,175	4,760	Kenya
1982	22,050	1,112	24,520	Kenya
1983	170,244	1,345	228,980	Germany DR (90%), Kenya (10%)
1984	170,577	1,347	229,860	Germany DR (88%), Kenya (10%)
1985(^)	190,170	1,564	297,430	Yemen, Djibouti, Ivory Coast (2%) U.R.S.S. (99%), Nigeria and Djibouti (1%)

(^) First 8 months

Note : In the last 3 years total sales amounted to about 530.000 litres. The major kind of export were distributed as follows: Gouder 38,7%; Dukam 30%; Kemela 13,6%; Awash Christal 13,% ; Soave 4%.

Source : E.B.C. (Ethiopian Beverage Corporation)

2.1.4 Some considerations about the present economic results of the Ethiopian wineries

The wine production cost analysis and the official economic accounts regarding the 3 Addis Ababa wineries, drawn up by E.B.C. for the last 5 calendar years (1980 - 1984), show, on one side, a pro - fressive-even if in a relative modest measure - increase of the receipts from sales, and, on the other side, an increase, at an higher rate, of the costs; as a result profit margins rapidly declined.

In fact, unit sale prices have not been changed during this period, whereas the main cost components - raw and auxiliary material (mostly imported) and labour - have been adjusted in rela - tion to the foreign market trend and to the domestic price index, res - pectively.

Production cost of a 0,750 litre bottle is shown in the Table 7. It has been remarked that the cost of an empty bottle as an input, is around 50% of the total production cost (0.85 Birr per bottle) and from 18 - 22%, for the best quality wines, to 57% for the cheapest kind of wine ("Sariss"), of the unit sale prices of a bottle of wine. Wages and salaries paid in 1985 by Awash Wineries (Addis A - baba) are shown in the Tab. 8.

AWASH WINE FACTORIES

Tab. 7 - PRODUCTION COST PER BOTTLE OF WINE (75 cc), SEPT. 1985

(Birr)

COSTS	KEMILA MEDIUM DRY	AWASH CRISTAL	DUKAM, AMBA	GOUDER, SOAVE
- Raw material, including auxiliary	0.4594	0.3557	0.4041	0.3798
- Direct labour	0.1515	0.1515	0.0492	0.0503
- Electricity and water	0.0053	0.0053	0.0022	0.0022
- Fuel and oil	0.0080	0.0077	0.0012	0.0012
- Bottles	0.8500	0.8500	0.8500	0.8500
- Corks, capsules, labels, glue	0.2201	0.2201	0.3714	0.2965
- Container breakages	0.0082	0.0082	0.0098	0.0114
- Overheads (production)	0.0525	0.0525	0.0611	0.0212
- Depreciation (buildings and equipment)	0.0231	0.0231	0.0100	0.0102
TOTAL	**1.7781**	**1.6741**	**1.7590**	**1.6228**

Source : E.B.C. (Ethiopian Beverage Corporation)

Tab. 8 - AWASAH WINE FACTORIES : WAGES AND SALARIES, SEPT 1985 (^)

CATEGORY - PERSONNEL	A. LIDETA B.		A. KETEMA B.		MAKANISSA B.		TOTAL	
	N.	Value	N.	Value	N.	Value	N.	Value
- MANAGERS	6	79.8	1	12.0	1	11.4	8	103.2
- JUNIOR MANAGERS	11	67.5	19	58.9	7	36.0	37	162.4
- SKILLED PERSONNEL	21	100.4	8	45.6	7	33.6	36	179.6
- SEMI-SKILLED PERSONNEL	55	178.4	16	46.5	10	24.6	81	249.5
- SECRETARIES AND CLERKS	20	61.4	2	7.9	6	26.0	28	95.3
- UNSKILLED PERSONNEL	230	290.4	157	205.2	118	136.3	505	631.9
TOTAL	**343**	**777.9**	**203**	**376.1**	**149**	**267.9**	**695**	**1,421.9**

SOURCE: E.B.C.(ETHIOPIAN BEVERAGE CORPORATION)

(^) Including official fringe benefit of 15 Birr per capita/per annum

2.2 THE CONSTRAINTS OF THE EXISTING WINERIES

2.2.1 General

With the purpose to identify all the constraints and problems which are involving more and more the efficiency of the Ethiopian existing wineries, IFAGRARIA experts carried out on exhaustive research through careful visits to the factories and the collecting of all available and relevant information and data affecting all aspects directly and indirectly linked to the productive cycle: supplying of raw material and auxiliary products,condition of the equipment and relating technologies, building status and adequacy , personnel, organizational structure, price and marketing policies, economic results, etc.

This research started from the following key question: why the existing wineries are no longer in the condition to meet the growing domestic consumption of wine and to export to a more significant level? Why they are not able to improve wine qualities?

The answer to this question can be found, firstly in the absolute low present availability level of local fresh grape ; secondly in the insufficiency and poor condition of the equip - ment; thirdly in the lack of a rational organizational scheme involving the technical bringing up to date the personnel and the productive programs and coordination between wineries, E.B.C. and vineyards ; and, lastly, the lack of an effective sales and marketing policy.

2.2.2 The use of dry raisin

Up to the present day, the prevailing use - for some wineries the total use - of imported dry raisin in wine processing causes, on one side, a low quality wine production and, on the other side, a considerable outflow of foreign currency, not balanced by an inflow from exports, which, in their turn, could be successful but by using only, or in a reasonable level, fresh grape.

Moreover, the use of dry raisin leads to the use of high quantities of sugar and water, chemical products and enzimes which affect the traditional organoletic characteristic and taste of the wine; and this kind of wine cannot meet the requirements of the internatio - nal regulations.

The problem of the availability of fresh grape as a condition to improve the quality of Ethiopian wine, especially in view of higher exports, will be taken into consideration in Section 5.2.

2.2.3 Equipment condition

Almost all the wineries have been producing for many years, so their equipment is old, in poor condition or out of use. Spare parts are not available, because the respective types of machines and equipment are obsolete or no longer produced. The lack of suitable and modern machines compels the factories to carry out by hand certain processing stages.

Also the laboratories for analyses are generally not adequa - tly equiped.

2.2.4 Site and building conditions

With the exception of the Asmara Wine Factory, the Addis Ababa Wineries are working in too narrow areas or in areas having interferences with other factories activities, constraints which hinder possible enlargements.

Buildings and related services and utilities (electric power, water network, sewerage system) need, according to their age and conditions, interventions to a more or less degree, such as restructuration, extraordinary maintenance works, additional elements, etc., in order not only to facilitate the productive flow, but also for hygienic necessity.

2.2.5 Constraints in the organizational sector

According to the opinion of IFAGRARIA team, shared also by E.B.C. staff, the global level of wine production does not justify keeping operational the three factories in Addis Ababa, without finding a solution for a net diversification of production and tasks. The present organization scheme involves very high expenses for equipment, personnel, transport and energy.

The IFAGRARIA team also considers there is not a full coordination between E.B.C. and Horticulture Development Corporation, that is between grape cultivation programmes (requirement of grape in quantity , quality and time) and the wineries productive targets (see point 5.4).

There appears to be an excess of non-skilled personnel, whereas the number of qualified staff is low and scattered in the different wineries. The technicians are well prepared: but their briefing on the most recent technologies would be useful.

2.2.6 Constraints in the marketing policy

This matter too will be covered in depth in Chapter 3. For the moment the weak organization in the sales and marketing sector seems to cause limited negative effects, since the present wine output level does not meet the domestic potential demand.

However in the future, when the whole wine sector will be rehabilitated and will be put in condition to steadly improve production, sales will indoubtedly need the essential support of a strengthening of the marketing policy on a more effective basis.

All this implies new methods starting from the presentation of the products, their promotion in the domestic and foreign markets, and ending with the fixing of different prices for each selected kind of wine, which should be possibly adjusted periodically according to the consumption markets trends.

3. MARKET STUDY ON THE ETHIOPIAN WINE SECTOR

3.1 GENERAL

Production of wine in Ethiopia is managed by the Ethiopian Beverage Corporation (E.B.C.) under the supervision of the Ministry of Industry. E.B.C. is also responsible for the national production and trade of beer, mineral water, soft drinks, alcoholic beverages and aperitives.

Wine is produced in 4 factories: 3 in Addis Ababa, called Awash Wineries (Awash Lideta Branch, Awash Makanissa Branch and Addis Ketema Branch) and one in Asmara (Asmara Wine and Liquor Factory).

In the last 5 years total production of wine varied from 8 to 9 million litres, which is the limit of the overall capacity of the plants. Production was totally and easily absorbed by the domestic market, in spite of the quality and relatively high price of the product, pratically all made from dry raisin.

As a matter of fact , the potential domestic demand appears to be far higher than the actual production. This fact has led the management responsible for the production of wine to search for the most suitable measures for a steady increase of the total capacity of the Ethiopian wineries, in order to meet domestic demand and to develop also exports, which are at present at a very low level.

The two major constraints can be identified:

- in the present technic, operational and organizational conditions of the wineries, all operating since many years;
- in the absolute lack of grape supply coming from the national vineyards.

This last circumstance does not allow to export wine having the required quality and price standards in competition with other wine exporting countries.

The inadequacy of the marketing policies is another constraint which would cause, at any rate, a slowing down of the sales even when production increases.

The present abnormal relationship between supply and demand of wine and the expected development of the future demand can be solved only through an overall technologic and organizational rehabilitation of the whole wine sector- which is the main target of the present study- and a steady development of the grape cultivation.

3.2 SOME DATA ON WINE PRODUCTION AND SALES

According to E.B.C., total production of wine reached in the last year (1985) a top level of about 93,000 hl, out of which 88,000 hl obtained in the three Addis Ababa wineries and 5,000 hl in the Asmara Factory.

Only 1,900 hl of wine were exported in this year, so wine for the domestic market can be estimated at about 91,000 hl.

Always according to data supplied by E.B.C., in the previous period domestic sales of wine from the Addis Ababa plants were reported as follows:

Year	hl
1980/1981	79,940
1981/1982	77,390
1982/1983	88,840
1983/1984	86,810

The mentioned Tab.6 shows the distribution of the domestic sales by Region, in bottles, in the period 1980-1985. Data are summaried below:

Year	000 Bottles
1980	7,654
1981	7,936
1982	7,688
1983	9,113
1984	9,379
1985	10,137

Due to the different content of the bottles (from 0,350 litres to 1 litre) and to the different definition of year (data are originally reported to the Ethiopian Calendar year), statistics expressed in hectolitres have been retained for further elaborations.

3.3 ANALYSIS OF THE DOMESTIC CONSUMPTION

In the three last years the consumption of wine in Ethiopia remained at around 20 centilitres per caput/year (1) , viz about one table glass. On the contrary domestic consumption of beer, tey (2) and spirits continued to increase. The climate - at any rate relatively mild in the whole highplane - is not a sufficient reason for a such low use of wine. In all other wine African producer countries wine consumption is by far more spread(see Annex 3,B.2).Also in many other African countries not producing wine, including those with all tropical climate and where moslems are an important population component, per caput wine consumption (imported) is higher, also taking into account wine consumption of expatriates.

In Ethiopia, higher wine consumption is reported in hotels and restaurants, whereas sales in the shops and supermarkets appear relatively low.

Family consumption is limited to cheaper wine("Sariss"): that means that high prices represent a serious constraint for a wider spreading of wine among the average and low income population segment.

Moreover wine consumption in rural zones is very modest.

Ethiopian wine is sold in glass bottles and straw covered flask (fiasco, according an Italian use), having capacity of litres 0.350 - 0.750 (most common) - 0.900 - and 1 (more rare). 88 - 90% of wine produced in the factories is red, the remaining 10 - 12% is white.

The most common types of wine, with the correspondent unit price, are listed in the following Table 9.

Red "Sariss" is the most marketed for its low unit price (1.50 birr/bottle of 0.750 l.)."Gouder" , "Dukam" and "Soave" (white) of higher prices (and better quality) are mostly consumed in hotels and restaurants, and exported.

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(1) Average sales 8.6million litres; average population 42.0 millions

(2) An alcoholic beverage obtained from the fermentation of barley with honey.

Tab. 9 -UNIT PRICES OF WINES AND SOME OTHER BEVERAGES SOLD IN THE DOMESTIC MARKET, PER BOTTLE - 1984/1985 (^)

TYPE OF WINE (^)	BOTTLE CONTENT (NET) (litres)	UNIT PRICE (^^)	
		RETAILER	CONSUMER
- SARISS	0.900	1.75	2.25
"	0.750	1.50	2.00
- GOUDET	0.750	3.00	4.00
"	0.350	1.75	2.25
- DUKAM	0.750	5.00	6.00
"	0.350	2.75	3.25
- SOAVE	0.750	3.00	4.00
"	0.350	1.75	2.25
- KILKIL	0.900	6.00	7.00
- AMBA	0.750	5.00	6.00
"	0.350	2.75	3.25
- ABADIR	0.750	5.00	6.00
"	0.350	2.75	3.25
- KAMELA	0.750	4.00	5.00
- CRISTAL	0.750	4.00	5.00
- KESSEM RED	0.750	3.00	4.00
" "	0.350	1.75	2.55
- GOUDET ROSE	0.750	3.00	4.00
- ORVIETO	0.350	1.25	2.00
- ESSAMESSA	0.750	5.00	6.00
- VERMOUTH	0.900	2.50	3.00
"	0.750	2.00	2.50
- SPARKLING (champagne)	0.900	5.00	6.00
- GRAPPA	0.750	8.00	10.00
- VINEGAR	0.650	1.00	1.50
"	0.350	0.50	0.75

(^) Some items have been produced discontinualy.

(^^) No change of unit price occurred since 1979/81. Basic prices are valid for all wineries. Consumer prices differ from place to place:those reported represent an estimated average. Retailer price is that of wine directly delivered to the customers by the wineries.

3.4 PROJECTIONS OF THE DOMESTIC DEMAND

3.4.1 Criteria adopted

The projections start from a present per caput consumption of 23.1 centilitres of wine per year, calculated on the basis of a poten - tial demand in the country of 100,000 hl, prudentially estimated slightly higher than the present effective consumption (about 90,000 hl), and of a population of 43,240,000 at mid 1985, 2.9% higher than the population of May 1984 according to the official Census (42,019,418).

The projections up to the year 2000 were constructed on the basis of the following main indicators:

Expected population growth rate
According to official sources the average rate of growth of Ethiopian population was 2.9% during the most recent years. 1984 census is considered the first complete survey: previous censuses were carried out also through sample methods.
Therefore, due to the lack of reliable population growth rates referred to former times, also its mathematic correct trend hardly can be stated.
International organizations (F.A.O., World Bank) assumed that, in the long term, the growthrates of the population of almost all African countries will decline.
In this survey IFAGRARIA team assumed rates of growth decreasing from 2.9% to 2.4% in the whole projection period (1985-2000).

Expected per caput wine consumption increase
This parameter is, in its turn, a result of an analysis of the main factors and effects causing changes in the wine consumption, among which:

- the substituting effect of other beverages, and in particular beer and tey. As previously observed the domestic consumption of these beverages is growing. In this analysis a follow up of this trend, at a reasonable pace was forecast. It should be underlined that the size of this effect depends upon the E.B.C.'s future productive and price policy. It is obvious that a considerable increase in the beer output, together with an effective campaign aiming to develop its consumption throughout the country, acting also on sale prices, would cause a slacktening in the growth rate of wine consumption;

- the rate of growth of the average per caput income, due to the development national policies;
- the drinking habits of various religious groups, taking into account that in Ethiopia Moslems mainly located in the northern and eastern regions, are in the minority;
- population distribution in urban and rural areas: according to the last official Census (1984) urban population represented 13% of the total, but it is expected that this percentage will rise (wine consumption is far lower in the rural areas);
- the distribution of the population by classes of age;
- the growing availability of fresh grape - with favourable effects on the wine quality - according to the targets of the National Plan and the recommendations of the IFAGRARIA experts as far as the possible improvement of cultural techniques is concerned (see Chapter 5 and Annexe 5).

The projections of the per caput wine consumption were estimated on an econometric basis, starting from the present individual potential wine consumption of 23.1 centilitres per year, with a future development according to different rates of growth (hypotheses I and II), assumed to be in relation with the rate of increase of the per capita G.N.P., so with a tentative to apply to the projections the method of the income-elasticity (1). Taking account of similar trends observed in other countries, a mathematic function of semi-log type was adopted.

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(1) It is calculated that the per caput G.N.P. increased of 0.6 - 0.8% per year on an average in teh period 1976/77 - 1983/84.
SOURCE: "National Bank of Ethiopia" - Quarterly Bulletins.

3.4.2 The results

The results are shown in the Fig. 2. According to the two hypotheses, the per caput wine consumption would reach respectively 28.3 and 30.5 centilitres in 1990, 33.2 and 36.9 cl. in 1995 and 35.5 and 39.1 cl. in the year 2000. The correspondent levels of the domestic demand of wine would be 140,900 hectolitres in 1990 according to the I hypothesis (low) and 151,800 hl according to the II hypothesis (average); respectively 188,700 hl and 209,700 in 1995, and 227,700 and 250,900 hectolitres in the year 2000(see Tab. 10). It should be emphasized that in these econometric assumptions neither the *unit price* nor the *quality* of wine "variables" were introduced. That means that higher consumptions could be reached, at least until certain limits, on the assumption of low prices and better quality, the latter strictly linked to the major share of fresh grape in the wine making.

Since the two objectives will be certainly achieved as a direct effect of the planned restructuration of the Ethiopian wineries - including better marketing policies - both the two above hypothesis have been substantially conceived on prudential bases.

Future higher levels of demand would be at any rate faced by the rehabilitated wineries, and especially by the foreseen new plant, producing, as later on exposed, according modular increasing capacity.

PROJECTIONS OF PER CAPITA WINE DOMESTIC DEMAND IN ETHIOPIA ACCORDING 2 HYPOTHESIS (1981-85 AND 1985-2000)

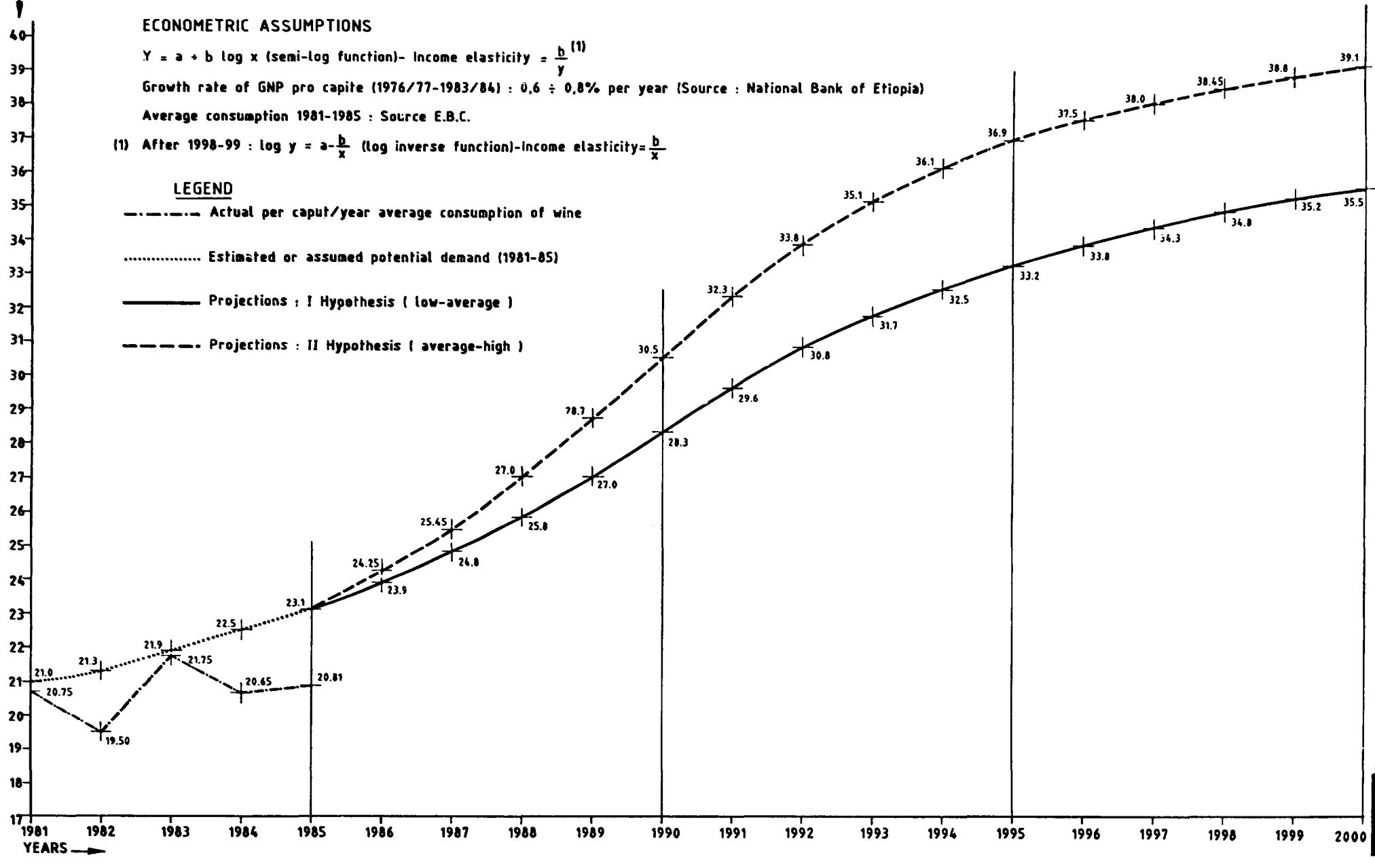

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Fig. 2

Tab. 10 - PROVISIONAL PROJECTIONS OF WINE DEMAND 1985-2000

YEARS	POPULATION (000)		POTENTIAL DOMESTC DEMAND				EXPORT (000 Hl)		TOTAL DEMAND (000 Hl)	
	Annual growth rate	Total (1)	cl/pc/y (I Hyp.)	Demand (000 Hl)	cl/pc/y (II Hyp.)	Demand (000 Hl)	I Hyp.	II Hyp.	I Hyp.	II Hyp.
1984	2.90	42,020	-	-	-	-	-	-	-	-
1985	2.90	43,020	23.1	100.0	23.1	100.0	1.9	1.9	101.9	101.9
1986	2.89	44,490	23.9	106.3	24.25	107.9	2.5	2.5	108.8	110.4
1987	2.88	45,770	24.8	113.5	25.45	116.5	4.0	4.0	117.5	120.5
1988	2.86	47,080	25.8	121.5	27.0	127.1	6.3	6.3	127.8	133.4
1989	2.85	48,420	27.0	130.7	28.7	139.0	8.9	8.9	139.6	147.9
1990	2.81	49,780	28.3	140.9	30.5	151.8	13.5	13.5	154.4	165.3
1991	2.76	51,160	29.6	151.4	32.3	165.2	17.4	17.9	168.8	183.1
1992	2.74	52,560	30.8	161.9	33.8	177.7	20.3	20.5	182.2	198.2
1993	2.69	53,980	31.7	171.1	35.1	189.5	22.7	24.1	193.8	213.6
1994	2.63	55,400	32.5	180.0	36.1	200.0	25.2	26.8	205.2	226.8
1995	2.58	56,830	33.2	188.7	36.9	209.7	27.1	29.5	215.8	239.2
1996	2.54	58,260	33.8	196.9	37.5	218.5	29.2	31.9	226.1	250.4
1997	2.50	59,720	34.3	204.8	38.0	226.9	31.3	34.0	236.1	260.9
1998	2.47	61.180	34.8	212.9	38.45	235.2	33.4	36.2	246.3	271.4
1999	2.43	62,660	35.2	220.6	38.8	243.1	34.5	38.2	255.1	281.3
2000	2.40	64,160	35.5	227.7	39.1	250.9	35.5	40.0	263.2	290.9

(1) Rounded figures.

3.5 EXPORT PERSPECTIVES

3.5.1 Present situation

During the last 8 years exports of Ethiopian wine showed an irregular trend from the standpoint of the sale levels, importing countries and time (see Tab. 6).

In 1978 only Tanzania imported wine in very modest quantity (45 hl). From 1980 to 1984 Kenya imported yearly from 40 to 220 hl. Due a Trade Protocol Agreement, Germany D.R. and URSS imported relatively higher quantities of wine: the former 1,522 hl in 1983 and 1,500 hl in 1984; the latter 1,890 hl in 1985 (1). In 1984 and 1985 very little quantities of wine were purchased by Nigeria, Yemen P.R., Djibouti and Ivory Coast (about 40 hl on a whole). In short, only in the 3 last years exports totalled from 1,700 to 1,900 hl - roughly only 2% of the national production - whereas in the previous years they were quite negligible. "Gouder", "Dukam", "Soave", and "Kemela" were the most exported kinds of wine.

Negative factors hindering the sales of the Ethiopian wine in the foreign markets are represented especially by the low quality of the wine, still produced mainly from dry raisin, due in turn to the lack of fresh grape locally produced (2).

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(1) Payment was negotiated in Birr through the National Bank of Ethiopia. Therefore no foreign currency inflow to the balance of payments ensued .

(2) Wine destined to export, due to its higher content of fresh grape, is undoubtedly of a better quality in respect to wine for domestic consumption.

Other constraints are:

- high prices in relation to the wine quality;
- strong competition in price and quality from the traditional wine exporters like France, Italy, Spain, Portugal, South-Africa etc.;
- lack of National Regulations on the processing, classification, pa - ckaging, handling, pricing and trade of wines;
- lack of organic marketing and promotional policies.

Of course an improvement of these last measures would ne - vertheless remain ineffective until the main constraint - quality - will be not removed.

3.5.2 Export perspectives

As a consequence of the last considerations, the perspectives for a successful development of Ethiopian wine exports are strictly connected, firstly to the future availability of grape in the country, since the objective, at least in the middle term, is to export wine wholly produced from fresh grape. Of course there is the alternative to export mixed wine - from dry raisin and fresh grape - but dra - stically reducing the percentage of dry raisin.

However this way could meet serious problems, also of psy - chological order, expecially at the starting of new policies aiming to gain foreign markets and to cancel the present unfavourable image of the Ethiopian wine abroad. This is therefore a problem regarding the wine quality.

Secondly, exports must be supported by effective promotio - nal policies, including pricing. The perspectives on grape production are later analyzed (3.5.3).

3.5.2.1 Trends of wine world market

In the recent years, the wine world market was characterized by two opposite trends: increase of the overall production and progressive fall of wine demand, especially in the most traditional wine consumer countries. This caused a decline in prices and, consequently, stronger competition among the major wine producers.

The technologies of wine processing, bottling, packaging, conservation, distribution, together with massive promotional compaigns in the industrialized countries are causing great difficulties to the producers in many of the remaining countries, among which are African countries like Algeria, Tunisia and Morocco, where vineyard areas have been reduced.

Additional and more detailed information on this suject are included in the Annex 3.B.1.

3.5.2.2 Wine consumption in the African producer countries

In Ethiopia the per caput consumption of wine is around 21 centilitres/year. In the remaining 4 African wine producing countries this level is much higher: over 1 litre in Algeria and Morocco, 3 litres in Tunisia (three countries where moslems are in majority) and around 10 litres in South Africa. For more detailed, see Annex 3.B.2.

3.5.2.3 The potential importer countries of Ethiopian wine

For each potential importer - and in particular for the countries that, at present or in the past, have purchased Ethiopian wine - some information on the wine sector (production, imports, domestic consumption, distribution canals, wine regulations, etc.) have been supplied, together with some recommendations for possible sales of Ethio

pian wine in these countries, among which URSS, Germany D.R., Kenya, Nigeria and Ivory Coast.

The findings of the market survey have been inserted in the Annex 3.B.3. and are hereafter summarized by potential importer country:

- **U.R.S.S.**
  This country was the main purchaser of Ethiopian wine in 1985, in which about 1,900 hl. were sold on the basis of a special Trade Protocol Agreement. In that year this purchase represented less than 1‰ of total Russian imports. In the most recent years the main suppliers were the Eastern European Countries (Bulgaria, Jugoslavia, Hungary, Czechoslovakia, etc.), Algeria, Italy and Spain.
  The perspectives of future higher exports are favourable, taking into account that, starting from 1989-1990 (according to the implementation schedule, should it will become timely effective), there will be increasing availability of wine from fresh grape, therefore competitive in the international market.
  Of course it is not possible - and it would be rather pretentious - to forecast, since now, the levels of exports of Ethiopian wines to U.R.S.S., in the medium and long term (and this is valid for the remaining importer countries), since they are affected by too many factors and conditions. Therefore the export indicative targets later on exposed are the result of a first reasonable approach or assumption, mainly based on the follow up of the trade agreements and on unchanged conditions as far as sovietic regulations on wine import are concerned according to this approach, Ethiopian exports of vintage wine in U.R.S.S. could easily reach a level of 5,000 - 6,000 hl. in 1990, 12,000-13,000 hl. in 1995 and 15,000-16,000 hl. in the year 2000.

- **GERMANY D.R.**
  This country imported in 1983 and 1984 about 1,500 hl. of Ethiopian wine (1‰ of total german imports) also on the basis of a trade agreement being the main suppliers the eastern European countries (Hungary, Jugoslavia, Bulgaria, Romania, Czechoslovakia), Algeria and Italy. According to information given by the E.B.C., Ethiopian sales to Germany D.R. should raise to 7,500 hl.

On the basis of the considerations expressed for U.R.S.S. as far as forecasts are concerned, it was assumed that exports of Ethiopian wine (of course, only from fresh grape) in Germany could reach 5,000 - 6,000 hl. in 1990, 10,000 - 11,000 hl. in 1995 and 14,000 - 15,000 in the year 2000.

German regulations on wine domestic and foreign trade, particularly rigorous, must be carefully observed.

- **KENYA**

Ethiopia exported Wine in Kenya in a relative modest quantity: 40 hl. in 1980, 260 hl. in 1981 and 180 hl. in 1983. Afterwards trade relations in this field stopped.

In the recent years, this country imported wine from France, Italy, Spain, Portugal and Austria.

Consumption of imported wine from non-residents and tourists is very important. Local population in drinks also wine (high and average income classes) but in relatively modest quantity. Consumption of papaya wine, locally produced, is more spread, due also to its lower price.

It is suggested to re-establish the previous trade relations between E.B.C. and the Kenya Wine Agency Ltd. (the only authorized wine importer), on renewed bases: offer of high quality vintage wine at competitive prices, Ethiopian sale qualified agents in Kenya, also responsable for promotion and advertising.

It is likely that Ethiopian exports of wine in Kenya will meet with constraints mainly represented by European wines and by uses and habits strengthened in the post.

However proper contacts governmental level could cause a moderate increase in the sales. In this connection, according prudent expectations, the following levels of export of Ethiopian wine in Kenya have been assumed: 800 hl in 1990, 1,500 - 1,800 hl. in 1995 and 1,900 - 2,500 hl. in the year 2000.

For the moment wine export to Kenya are scarcely protected by national regulations.

- **NIGERIA**

Only in the last year (1985) a very modest quantity of Ethiopian wine (900 litres) was sent in Nigeria. Wine is mostly consumed by foreigners(resident and non-resident).

Among the Christian population (about 25 million), only the high and average income classes in urban areas, are modest wine consumers. The main suppliers are France, Italy (quality wine mostly in bot - tles) and Portugal (mostly in bulk or in higher capacity containers of cheaper prices). Imported wine - there is no local production- is distributed to big stores, restaurants and hotels.
The perspectives for Ethiopian exports of wine in Nigeria do not ap pear very favourable, also for transport reasons (distance). Howe- ver, in the framework of the normal trade and political relations between the two countries, the E.B.C. could establish relations with the Nigerian importers or the hotel chains, starting with initial exports of first quality wine, eventually as samples, with the pur- pose to establish pluriennal trade agreements.
That being stated, the following exports have been assumed: 500 hl. in 1990; 1,000 hl.in 1995 and 1,300 - 1,500 hl.in the year 2000.
Also wine export to Nigeria are not protected by particular regula- tions.

- **IVORY COAST**

Ivory Coast imports wine in bottles mainly from Italy, France and Spain and wine in bulk from many other countries, besides the three mentioned, especially from Algeria, Greece, Tunisia and Portugal.
In 1983 imports, reached over 600,000 hl.
In this country the main consumers are, as usual, the white resi - dents and the tourists. A modest use of wine comes from the catho- lic and protestant communities.
The perspectives to export Ethiopian wine in Ivory Coast do not ap- pear favourable. In 1984 samples for 180 litres were sent to this country, possibly as an attempt to establish new trade relations. However, this attempt could be repeated in the future since wine offered will be from fresh grape and therefore competitive.
In this approach, for sake of prudence, no significant export of wi ne to Ivory Coast is assumed.

- **OTHER AFRICAN COUNTRIES**

Only Tanzania (in 1978) and Djibouti (in 1985) imported Ethiopian wi ne (45 and 20 hl. respectively). Taking into account the future better quality of wine the trade relations with the two countries could be re-established as regards the other countries.

In this "work hypothesis" after a market analysis, a selection was made holding in due consideration the favourable and infavourable aspects, so as distance (transportation problems), wine production in the country, particular trade clauses or bilateral agreements aiming to favour certain supplier countries (for example almost all the francophone territories), the drinking habits of various religious groups, the political and fiscal regime, the touristic presence, etc.

On the basis of this approach the E.B.C., duly supported at governmental level could try to enter in relation with: Malawi, Mozambico, Uganda, Zambia, Zimbabwe, Angola and, eventually, Zaire.

Always according prudential criteria, the following overall sales were assumed: 400 hl. in 1990, 1,000 hl. in 1995 and 1,500 - 2,300 hl. in the year 2000.

- **OTHER EASTERN EUROPEAN COUNTRIES**

  Many of these countries are wine producers and exporters some of them import wine of different kind. It is here assumed that Ethiopia, through special trade agreements, similar to those already established with U.R.S.S. and Germany D.R., can supply quality wine , even if in relatively modest quantity.

  These are the indicative levels considered: 400 hl. in 1990, 800 - 1,000 hl. in 1995 and 1,000 - 1,500 hl. in the year 2000.

- **WESTERN EUROPE COUNTRIES**

  The possibility that the Ethiopian Wine can enter the western Europe is, of course remote. Since in these markets all consumptions are highly spead in kind, it is likely that also bottles of high quality of Ethiopian wine could be purchased by the big stores or "enotheques" wanting to enlarge their wine collections.

  But, in any case, the volume of wine exported would be quite unsignificant.

  From the commercial and economic point of view. The possibility to supply wine in bulk for blending purposes (to France and Germany F.R., for example) has been also excluded.

- **OTHER COUNTRIES**

  A negligeable parcel of wine was sent in Yemen P.R. in 1984. Exports in the Midale East Countries - the nearest of Asiatic ones - meet the major constraints in the drinkig habits, so that sales should be addressed to non-moslem populations, european residents or tourists, etc.

Within these limits, certain quantities of Ethiopian wine could be exported, for example, is Saudi Arabia Iran, Iraq, Oman, Siria, etc whereas sales in the Southern and Far East countries (India, China, Japan, etc.) mast be excluded in this approach.
E.B.C. is trying to establish contacts with U.S.A. through sales agents.
The following exports have been considered: 200 hl. in 1990, 400 - 700 hl. in 1995 and 800 - 1,200 hl. in the year 2000.
This data is shown in the Tab. 11 where total possible exports in the short, medium and long term correspond to the projections shown in the Tab. n. 12, on the basis of a low-average and average-high hypothesis.
It is worth underlining that according to the most recent international regulations, wine must be sold in bottles of 75 cc.

Tab. 11 - APPROACH OF FUTURE POSSIBLE EXPORTS OF WINE FROM ETHIOPIA

COUNTRIES	NET IMPORT				ETHIOPIAN EXPORTS: POSSIBLE TARGETS (Hl)				
	TOTAL		FROM ETHIOPIA		1990	1995		2000	
	Year	Hl	Year	Hl		From	To	From	To
. U.R.S.S.	1983	8,000,000	1985 (a)	1,900	5,700	12,000	13,000	15,000	16,000
. GERMANY D.R.	1982	1,550,000	(b)	1,500	5,500 (e)	10,400	11,000	14,000	15,000
. KENYA	1983	750,000	(c)	220	800	1,500	1,800	1,900	2,500
. NIGERIA	1983	20,000	...	(d)	500	1,000	1,000	1,300	1,500
. IVORY COAST	1983	600,000	...	(d)	(f)..	..	..	..	..
. OTHER AFRICAN COUNTRIES (1)	...	...	...	(d)	400	1,000	1,000	1,500	2,300
. OTHER EASTERN EUROPEAN COUNTRIES	...	...	-	-	400	800	1,000	1,000	1,500
. WESTERN EUROPEAN COUNTRIES (2)	...	...	-	-	..	..	..	..	..
. OTHER COUNTRIES (3)	...	...	1985	(d)	200	400	700	800	1,200
TOTAL	...	...	1985	2,200	13,500	27,100	29,500	35,500	40,000

(a) First 9 months.
(b) Average 1983-1984.
(c) 1981 and 1983.
(d) Less than 100 hl.
(e) E.B.C.'s target: 7,500 hl.
(f) Due to the strong competitivity of wines imported from France and Maghreb countries Ethiopian exports for sake of prudence were not considered in this approach.

(1) Only Tanzania, in 1978, and Djibouti, in 1985, imported from Ethiopia insignificant quantities of wine (45 and 20 hl, respectively).
(2) Possible exports of Ethiopian wine in Western Europe were also not assumed.

3.5.3 The development of grape production as a key condition for Ethiopian wine exports. Projections of grape output and correspondent wine production

This matter will be dealt in the subsequent Chapter 4 ("Availability of raw material"), but the results concerning projections of grape output and corresponding wine production (from fresh grape) have been used in this section of the Study in order:

- to evaluate quantitatively and qualitatively the perspectives for wine exports;
- to carry out projections - in the short, middle and long term - of the total demand for wine, formed by the potential domestic demand (previously estimated) and expected exports.

The results are presented in the following Table n. 12 and Graphic (Fig. 3).

Projections have been made according two hypothesis: average-high and low-average, and include:

Table n° 12- PROJECTION OF GRAPE OUTPUT, WINE PRODUCTION AND EXPORT

AT SHORT, MEDIUM AND LONG TERM (1985-2000)

YEAR	LOW-AVERAGE HYPOTHESIS				AVERAGE-HIGH HYPOTHESIS				% OF WINE FROM FRESH GRAPE ON TOTAL WINE DEMAND	
	GRAPE OUTPUT (q.)	WINE PRODUCTION (hl)			GRAPE OUTPUT (q.)	WINE PRODUCTION (hl)				
		Total (1)	Export (2)	Dom. Consumption (3)		Total (1)	Export (2)	Dom. Consumption (3)	Low HYP	Av-high HYP
1985	**4,000(4)**	**(1,925)**	**(1,900)**	**(25)**	**4,000**	**(1,925)**	**(1,900)**	**(25)**	**(1.9)**	**(1.9)**
1986	8,550	(4,700)	(2,500)	(2,200)	8,550	(4,700)	(2,500)	(2,200)	(4.3)	(4.3)
1987	10,590	(5,825)	(4,000)	(1,825)	10,590	(5,825)	(4,000)	(1,825)	(5.0)	(4.8)
1988	17,170	9,445	6,300	3,145	17,170	9,445	6,300	3,145	7.4	7.1
1989	23,820	13,100	8,900	4,200	23,820	13,100	8,900	4,200	9.4	8.9
1990	**32,500**	**17,875**	**13,500**	**4,375**	**35,800**	**19,690**	**13,500**	**6,190**	**11.6**	**11.9**
1991	40,000	22,000	17,400	4,600	44,800	24,640	17,900	6,740	13.0	13.5
1992	46,300	25,465	20,300	5,165	52,450	28,850	20,500	8,350	14.0	14.6
1993	51,300	28,215	22,700	5,515	59,300	32,615	24,100	8,515	14.6	15.3
1994	56,000	30,800	25,200(5)	5,600	66,000	36,300	26,800(5)	9,500	15.0	16.0
1995	**60,000**	**33,000**	**27,100**	**5,900**	**71,550**	**39,350**	**29,500**	**9,850**	**15.3**	**16.5**
1996	63,750	35,060	29,200	5,860	75,950	41,770	31,900	9,870	15.5	16.7
1997	67,500	37,125	31,300	5,825	80,350	44,190	34,000	10,190	15.7	16.9
1998	71,250	39,185	33,400	5,785	84,250	46,340	36,200	10,140	15.9	17.1
1999	73,150	40,230	34,500	5,730	87,500	48,125	38,200	9,925	15.8	17.1
2000	**75,000**	**41,250**	**35,500**	**5,750**	**90,000**	**49,500**	**40,000**	**9,500**	**15.7**	**17.0**

(1) Overall extraction rate from grape: 55%.

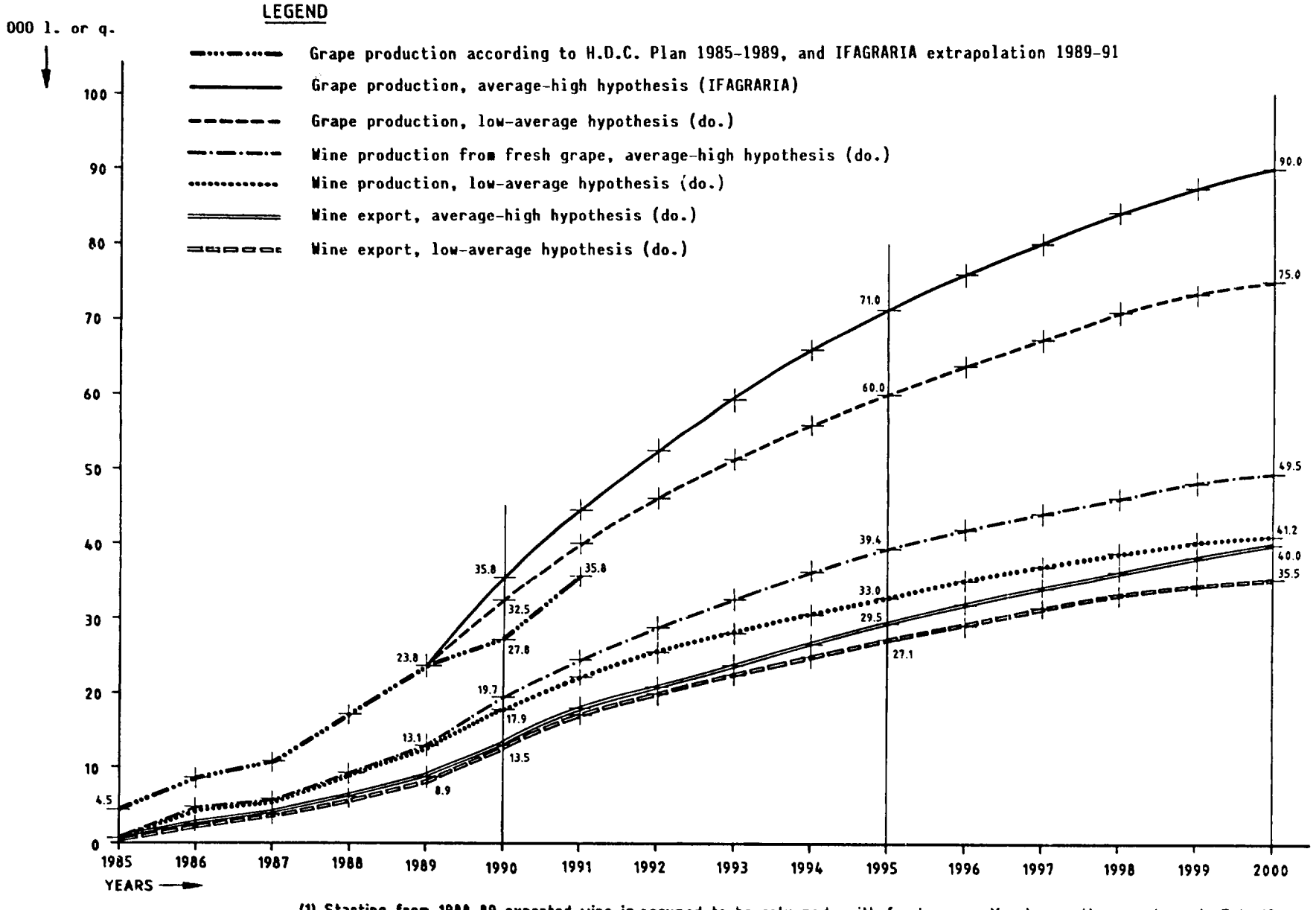
(2) Starting from 1988-89 exported wine is assumed to be only made with fresh grape. In the project start up period (1986-1987) exported wine is expected to be made with dry raisin and an increasing content of fresh grape.

(3) In this study is has been assumed (and suggested) that the domestic demand will be faced by wine from dry raisin and wine from fresh grape (if available), separately.

(4) Out of which 3,500 q. utilized by the Awash Wineries.

(5) 10-year Plan target: 20,200 hl. in 1993/1994.

PROJECTIONS OF GRAPE PRODUCTION, WINE PRODUCTION FROM FRESH GRAPE AND WINE EXPORT[1] (1985-2000)



(1) Starting from 1988-89 exported wine is assumed to be only made with fresh grape. Yearly results are shown in Tab. 12

Fig. 3

- grape output;
- corresponding theoretical wine production;
- percentage of pure wine at the disposal of the wineries for domestic consumption.

According to the low-average hypothesis, grape output in year 2000 would reach 41,250 hl.(^), out of which 35,500 (80%) exportable according projections, and the remaining 5,750 hl. for domestic consumption. The assumption to use grape as a yeast for wine production from dry raisin or to blend directly the wine - not exported - with wine from dry raisin, was not taken into consideration.

According to the average - high hypothesis, grape output would reach in the year 2000 90,000 q. wine 49,500 hl. out of which 40,000 hl. exportable.

(^) Overall extraction rate from grape: 55%, out of which 40% of high quality wine and 15% of lower quality wine (about 5% of wine, according a proper technology, is destined to the distillery).

The yearly levels of grape output, wine production and wine export are shown in the mentioned tables n. 11 and n. 12.

This objective could be achieved only by removing the con - straints previously mentioned. And, in particular - it is worth repea - ting - in the fields of wine quality, price and promotion.

3.6 PROJECTIONS OF WINE TOTAL DEMAND

These projections are shown on Table n. 11 and Graphic (Fig. 4) where possible exports levels according to the two hypotheses were ad - ded to the correspondent levels of the potential domestic demand.

Total wine demand would reach, in the short, middle and long term, the following levels;

Years	I hypoth. (low-average) (000 hl)	II hypoth. (average-high) (000 hl)
1990	154.4	165.3
1995	215.8	239.2
2000	263.2	290.9

By these assumptions, exports would represent 13-16% of the total demand. Taking into account the expected future levels of the domestic grape production (Tab. 12 and Graphic Fig.3), the content of wine from fresh grape in the total wine to be produced in order to meet the global demand, would pass from the present share of only 2% to around 12% in 1990, 16-17% in 1995 and 2000 (1). That means an use of a growing volume of dry raisin throughout the lifetime of the project (see point 5.3.1).

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(1) The required wine output should be, in reality, slightly higher, ta king into account waste and losses in the way production-final con- sumption (3-4%).

PROJECTION OF POTENTIAL DEMAND FOR WINE - 1985-2000

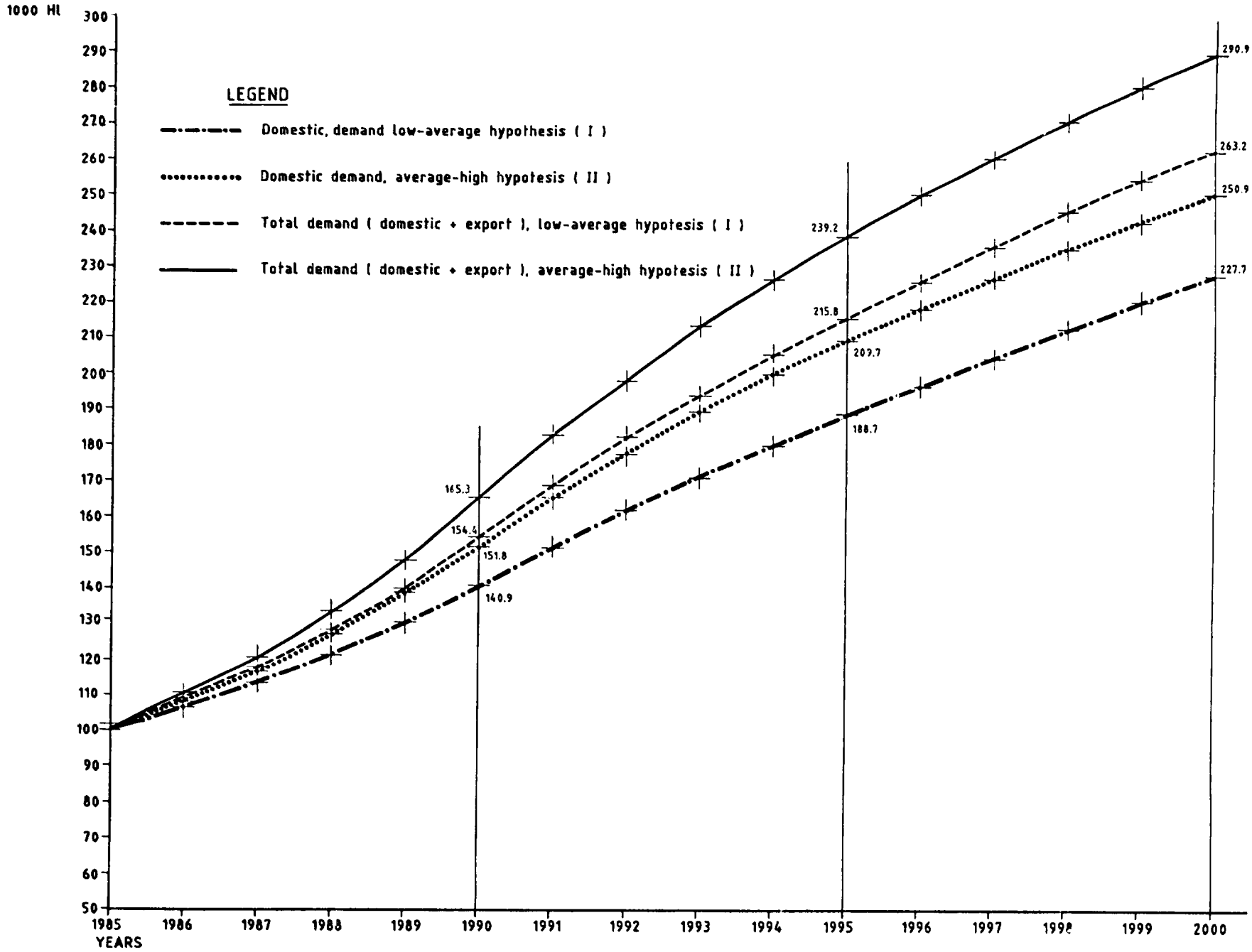

Fig. 4

3.7 MARKETING ANALYSIS AND POLICIES

3.7.1 Present situation

In Ethiopia wine is sold exclusively by the wineries mana - ged by E.B.C. :it is therefore pratically a monopoly regime. In general this situation is very likely to disregard the sales and marketing aspects necessary from a constant and careful improvement of wine quality, packaging, distribution, etc. and of its pricing, as for a consequence of the absence of competition, also with the foreign wines, not imported.

As previously said, wine is sold in bottles of various sizes and flasks. Sales in bulk , in barrel, kegs etc. are not yet made.

3.7.1.1 Domestic sales

The Ethiopian market is divided in two sector: Addis Aba - ba and Provinces.

Addis Ababa sector is segmented into 12 zones. Each zone is supplied by a delivery van, with a salesman-driver and two assistants In each zone there are 250 to 300 customers, mainly groceries , bars and little restaurants.

In addition to the zones, government hotels, supermar - kets and major restaurants are served by a special delivery agency. In the Province sector wine distribution is carried out:

- directly by E.B.C. transport (13 vans, 8 medium trucks and 7 trucks and trailers) and personnel (28 salesman-drivers, 64 assistants)in the Shoa Region and the southern part of the country;
- by means of sales agents in the outer regions, because of the shor- tage of transport facilities.

Wine promotion is very limited: in the main hotels and restaurants and in the supermarkets samples of wines are displayed to the customers in special windows, shelves, or racks.

At present advertisements on mass media are prohibited in Ethiopia as far as alcoholic beverages are concerned.

An organic legislation on wine processing, standards, packaging, prices, exports, etc. is under examination.

3.7.1.2 Export marketing

As remarked in 3.5.1., exports of Ethiopian wine reached in the two last years a level - still below 2,000 hl. - mainly thanks to bilateral agreements with Germany D.R. and U.R.S.S.

Promotional policies are just beginning, and E.B.C. is now planning the best ways for an expansion of exports, but is aware of the importance to firstly improve the quality of wine.

A promotional compaign is now in course to continue and enlarge wine sales in Germany D.R. and U.R.S.S. and to resume contacts with some African countries, in particular with Kenya, where two sales agents (Nairobi and Mombassa) have been recently appointed. Promotional actions are in course with U.S.A.

3.8 OUTLINES OF THE MARKETING-MIX OF THE ETHIOPIAN WINE AND RECOMMENDATIONS

3.8.1 General

A complete survey on this subject is reported in the Annex 3, Sections A, B, C, D, E and F.

The purpose of this section of the market study, which represents a summary of the Annex, is to present the up-to-date marketing methodologies followed by most of the producing countries constantly compared with the Ethiopian marketing policies actually applied.

Sales at factory gate are not carried out.

Unit prices are fixed according the two sales system: higher- in order to recover the distribution expenses - for direct sales; lower for the sale agents.

The selling prices of wines are uniform all over the coun - try, regardless of the distance. The margin of profit for sales in Addis Ababa zone covers the major expenses incurred for external sales.

It was noticed that during the last years (since 1980) sale prices of wines have not changed. Since the production costs (inclu - ding import of dry raisin and other auxiliary products) were increasing in the same period, the net income of the wineries declined progressive ly.

Taxation on factories gross income is 50%: it is obvious that a lower tax would allow the wineries to sell wine at a lower prices, with the possibility to spread the sales themselves (1).

No specific and organized marketing policy is followed to encourage domestic consumption. As a mather of fact neither in the E.B.C. nor in the single wineries a specialized sale office is operating.

(1) This problem should be taken into consideration when the overall capacity of the wineries increases as a result of the planned restructuration of the whole wine sector.

This section is subdivided into two chapters: wine marketing for domestic sales, and export marketing.

3.8.2 Domestic marketing policies

3.8.2.1 Objectives of the analysis

Ethiopian wine, as a product to be analyzed, has been split in its characteristic components: product (definition), quality, packaging, price, distribution and sales promotion.

Therefore the marketing-mix is the optimal requirement of each of these components with the purpose to analyze and carry out a rational strategy aimed at reaching the best economic results.

In this chapter the single elements of the marketing-mix in their standard will be compared with the corresponding situation in Ethiopia.

3.8.2.2 The products

The product is the most important component of the marketing-mix. A bad product selection cannot be compensated by the best conditions of the remaining components.

The conception that the production standard must satisfy the producer is wrong. Products must constantly meet the requirements of the market, the taste of the consumers, duly analyzed segment by segment.

Therefore a complete study of the markets and marketing will be the key for an exact definition of the market-oriented product.

3.8.2.3 The quality

This element i[illegible]aramount importance, especially in an open market, in presence of [illegible]ner offer sources. This is not the case of the Ethiopian market, where the only wine producers and sellers are the E.B.C. factories. An improvement of the wine standard would cause an increase in domestic sales. Undoubtedly this objective can be achieved particularly through a greater use of fresh grape in the wine making.

3.8.2.4 The packaging

The selection of the packaging must satisfy the require - ments of the intermediate customers and the final consumers taste, and, at the same time, the most important requisites by the technologic and economic point of view.

Therefore, bottling must be studied in its elements: mate - rial, volume or content, shape, corks or capsules, labels (shape, colour, drawing), texts, etc. Morever a number of regulations have to be res - pected.

Suggestions in this matter have been advanced in favour of the Ethiopian wine factories.

3.8.2.5 The price

The relative high prices of Ethiopian wines sold in the domestic market are influenced:

- by high production costs due to the present condition of the equip - ment , excess of personnel and high prices of certain inputs (e.g . glass bottle);
- by high margin of the gross profit, which in turn is highly taxed (50%).

Most of these negative factors will be certainly removed as a consequence of the planned restructuration of the wine sector. High taxation can be justified by the fact that wine is very likely considered a "luxury" product, at any rate not essential for the population.

However, a policy based on lower prices and higher sales seems to be preferred to a policy based on higher prices and lower sales, perhaps without affecting significantly neither the wineries profit nor the tax inflow, even if reduced in percentage.

Even if pricing does not represent,at the moment,a serious problem for the Ethiopian factories - the only wine producers - their reduction will be certainly taken into due consideration in the framework of the general objectives stemming from the planned new settlement of the wine sector in Ethiopia.

Moreover,lower prices (starting from lower production costs) together with better quality will be the key condition for a successful exportation of Ethiopian wines.

3.8.2.6 Distribution and sales

In Ethiopia wine is sold directly by the factories (or EBC) in Addis Ababa, Shoa Province and some southern provinces, using its own transport and personnel; through sale agents in the farther provinces of the country (see point 3.7.1.1).

Possible improvements in the distribution system have been considered in the Annex, among them: establishment throughout the territory of sales offices with stocking warehouses; restructuration of the marketing according to the traditional sales chain: producer, wholesaler, retailer, in the framework of the existing and future governmental policies on domestic trade. It should be undelined that this last distribution system - in any case under the direct statal control - could be more rational and less expensive (see Annex 3 - A.3.5).

3.8.2.7 Advertising and promotion

Also this component of the marketing-mix, is at present scarcely dealt in Ethiopia due to different reasons: monopolist position of the Awash wineries in the domestic market; saturation of the plants overall capacity, lower than the potential demand; prohibition of certain kinds of advertising in the field of alcoholic beverages.

In the above mentioned Annex a list of suggestions has been made by the marketing expert of IFAGRARIA Team. They are undoubtedly conceived and inspired by models from the industrially and developed countries and must be here considered rather in a long term perspective, taking into due account once more the expected rehabilitation of the Ethiopian wine sector and the socio-economic evolution of the country.

So many of the recommended measures - some of which are presently followed - must be retained in the framework of the present project. Promotion through advertising (in the local press, radio, television, roads, public means of transport, etc.), wine tests and parties, food fairs and exhibitions, wine samples in hotels, restaurants and the National Centre, special discounts, verbal advertising by retailers at customer level, etc. could be,of course, carried out in the light of the present governmental laws on advertisement and their eventual changes in the medium and long run.

3.8.2.8 Marketing criteria on wine selection

Selection and classification of wines is strictly connected to the different market segments, identified and analysed according activity sector, income level, etc., following marketing-oriented criteria, a different conception from market-oriented principles.

The methodologic strategies for this kind of marketing are also identified in the Annex.

Of course the selection of the wines, starting from the types presently produced, involves also the remaining marketing-mix, like quality, packaging and price.

As regards quality, a growing use of fresh grape in the wine making has been assumed, in line with the wine total demand projections at short, middle and long terms. However, in order to face the expected increasing domestic demand, Ethiopian wineries, also after the planned restructuration, will very likely continue producing wine using chiefly dry raisin (1).

3.8.3 Foreign market policies

3.8.3.1 General

The fact that some Ethiopian wines (Dukam, Gouder, Soave, Awash Kemila) were and are exported does not mean that they have gained the foreign market, in a free competition with the remaining supplier countries. At any rate, future trade bilateral agreements (e.g. with Germany D.R and URSS), have to be considered positive.

However the real future objective of the E.B.C. is to export wines of high quality, produced with 100% selected fresh grape, in concurrential conditions.

The mentioned Annex deals with the most suitable measures, conditions and recommendations required for a successful development of the Ethiopian wine export. Briefly these are the main conditions:

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(1) It is worth remarking that, starting from a reasonable period after the expected full restructuration of the Ethiopian wineries and a significant increase in the country of the grape output, wine destinated to foreign markets must be, on the contrary, possibly produced only from fresh grape.

3.8.3.2 The quality

It is the best passport to enter the foreign markets. This involves a constant knowledge of the demand (taste, other requirements), country by country; the necessity to use only selected grape, also through stricter agreements between the Horticulture Development Corporation and E.B.C.; the adoption of modern processing techniques; and , in general,respect for all the laws and regulations running in the im - porter countries.

3.8.3.3 The packaging

It is accepted that the type of bottle and, in particular, the label,are very important requirements for a good presentation of the wine. Inscriptions, drawings and, in a word, label design influence considerably - also by the psychologic point of view - customers and con - sumers.

There are obligatory information, to be reported in the bottles,so the exporters must be aware of the international regulations on this subject. Other inscriptions are optional. Further detailed information are given in the Annex 3.

3.8.3.4 The promotion

Many of requirements about this matter have been dealt for the domestic marketing-mix. Promotion in the foreign coun - tries - effective or potential importers- must be carried out with ma - jor care, since a certain number of actions will occur abroad, therefore with the full respect of the local laws, procedures and costs.

In the Annex some suggestions on this subject are given , especially in the case of a participation of the Ethiopian wines in the foreign fairs and exibitions.

3.8.4 Models of trade organization

3.8.4.1 General

This matter is analysed in the above mentioned Annex (Part D). For many years, but with a particular emphasis in the most recent, firm organizations in all productive sectors- including of course the wine trade - are reinforcing the staffs responsible of sales, attaching higher and higher importance to the marketing - oriented policy, as a natural follow up of the market-oriented one.

So in a firm, a trade organization suitable only to sell its own products, can or must be converted,directly or through an interme - diate structure, into an integrated marketing organization.

A trade organization can be structured according to fun - ctions or geographical areas or customer segments or distribution ca - nals or product and product line. In the mentioned Annex some sugge - stions are given for a better future structuration of the Ethiopian wi- neries.

3.8.5 International laws and regulations on wine trade

This matter is dealt in the part E of the Annex 3. Ethiopian Authorities - and in particular the E.B.C. - are already working in order to prepare special regulations concerning processing, quality re- quirements, classification, bottling, labeling, pricing and sales of the Ethiopian wine, taking into account that all traditional wine pro - ducer and exporter countries have their own legislation.

The European Economic Community regulations on wine production and trade (1979) represent to-day the most complete and organic document existing on this matter. Comments on the most important arti - cles of this legislation are also given in the mentioned Annex.

Among them it is worth reminding:

- regulations on grape production and vineyard development;
- classification and requirements of products coming from grape (jui - ce, must, wine, vinegar, "vinello", pomace);
- discipline on use of auxiliary products and other inputs (chemicals, sugar, etc.) in the wine making process;
- classification and requirements of wine to be sold in the domestic market or exported;
- special regulations for high quality wines produced in some particular regions (in Italy: D.O.C. = Controlled Origin Denomination);
- pricing regime within the E.E.C. members;
- regulations of the international wine trade with third countries.

4. THE EXISTING WINE FACTORIES

4.1 GENERAL

During September 1985 the IFAGRARIA team of experts visited the four existing wineries in Addis Ababa and Asmara, with full collaboration of the Ethiopian Beverage Corporation, to appraise their present situation and propose the best measures for their rehabilitation also with reference to the National Plan objectives.

For each factory the experts collected a series of data and information regarding:

- site and location;
- production (wine and other products);
- raw material and auxiliary products such as inputs, and their origin;
- personnel;
- processing line flow;
- consistence, conditions and operative characteristics of all machines, equipment, material and general installations;
- stocking and systems capacity (wine, raw material, finished products);
- condition and adequacy of all buildings and civil works;
- services, and in particular: electric power, water supply, sewerage systems, external areas;
- other relevant information, including hygienic situation and eventual environmental pollution problems;
- constraints and problems.

The E.B.C. technical office supplied, when available, drawings, graphics and plans of the factories areas and buildings.

Additionally, visits were made to some vineyards, in order to evaluate their future development, and to the plants producing glass bottles and plastic containers.

A complete description of each winery is reported in four separate Sections (A,B,C and D) of the Annex 4. Summary, conclusions and final appraisal follow in the next sector.

4.2 AWASH LIDETA BRANCH, ADDIS ABABA

4.2.1 Present situation and constraints

This is the most important and relative modern Ethiopian Winery. It is also the technical, commercial and productive co-ordination Centre for the remaining Addis Ababa Awash Wineries.

The factory produces and bottles wine (about 5,4 million litres in 1984/85) from imported dry raisin and from almost all the fresh grape presently available in the country. Of course wine with a higher content of grape is a better quality, and the only one which can be exported.

The plant produces in addition: sparking wine, vinegar , softs drinks, liqueurs, aperitives. Personnel amount to 343 units.

Total area of the winery is about 6,000 sq.m., divided by a passage right away. Covered area is 4,280 sq.m., including the main building on three floors (production section, offices and laboratory), warehouse, cellars and garage. A warehouse for finished products (500 sq.m.) is under construction.

Total capacity of the containers for wine making and stocking is about 9,700 hl.

The wine making equipment is old and scarcely effic ".

Most of the fermentation cement vats require restoring, especially in their internal coating and some accessories.

The wooden barrels for fermentation can be only partially recovered.

A modern bottling line, with a capacity of 3,500/4,000 pieces/h (average daily production 23,600 pieces/day) is not, at present, fully operational.

Also a new two-phase pasteurization unit, with a capacity of 50 hl is not yet in use.

Among the equipment to be considered in bad condition or out of use (full listed in the Annex 4/A), the following can be reminded: part of pressing machines, filters, pumps, iron reservoirs, corking and filling machines, pressure vats, etc.

The laboratory for analyses is not yet fully equiped. Some buildings are in poor condition and need restructuration works or heavy maintenance, to bring them in line with the standards required in food processing units. Electric installations and nets are not in line with modern operational and safety requirement.

Sewerage network requires repairs. In the external area activity is hindered by the lack of fully available area (passage right in favour of third parties) and insufficient warehouse capacity. In fact, the adopted sales system (direct deliveries) involves uncreasing and excessive movements of transport ulands in the areas, interfering with other operational requirements.

4.2.2 Conclusions

The winery will be in condition to continue and increase its activity - especially in the bottling sector - after a partial rehabilitation of its productive and building components.

4.3 AWASH MAKANISSA BRANCH, ADDIS ABABA

4.3.1 Present situation and constraints

The winery produces and bottles wine (1,2 million litres in 1984/85) almost completely from imported dry raisin, as well as soft drinks, and small quantities of vermouth, sparkling wine and liqueurs. The winery has a staff of 149.

The area (about 10,000 sq.m.) and the main building (3,750 sq.m.) are also utilized by an old distillery, and are leased from the Ministry of Housing.

Total theoretical capacity of containers (almost all in wood) for wine making, distillation and stocking, is over 2,600 hl; without the containers which cannot be economically repaired, the net available capacity would be about 1,900 hl.

Almost all the equipment for wine processing and bottling is hand operated, in bad condition, and scarcely efficient. Among them: part of the fermentation vats, pressing machines, filters, refrigerators, pumps, washing machines, etc. (see Annex 4/B). The laboratory for analyses is poorly equiped and the thermic power station is out of order.

Buildings - aged from 1918 to 1957 - previously utilized for other activities (distillery, warehouse, liqueurs plant) - need a general restructuration, including the re-planning of available space and the renewal or restoring of many sections (floors, walls, roofing, fixtures, etc.).

Also in this factory, the electric power plant and distribution network, water sources and related network and the sewerage system are not in keeping with modern operational and safety standards.

4.3.2 Conclusions

The winery could be fully rehabilitated in its processing, buildings and services components. However from the start the cost appears to be high. Therefore two different solutions were meanwhile considered: the plant relocation or its closing. This last alternative will be later supported by the fact that the erection of a new modern winery had in any case included in the project outline.

4.4 ADDIS KETEMA BRANCH, ADDIS ABABA

4.4.1 Present situation and constraints

The winery produces and bottles wine (2,2 million litres in 1984/85) from dry raisin, and also soft drinks and some other beverages in limited quantity.

Personnel: 203.

The total plant area is about 13,500 sq.m, but is also utilized by a Pepsi-Cola bottling factory. The winery area is about 4,500 sq.m out of which 1,500 sq.m are covered.

Total theoretical capacity of the containers in wood, cement, steel and glass fibre wool, is about 4,300 hl. Some containers are in bad condition and therefore the actual available capacity can be estimated at 3,100-3,200 hl, taking into account the recoverable containers.

Also in this winery a large part of the equipment is in bad condition or out of use, as listed in the Annex 4/C. In particular the wine making line (pressing machines, etc.) and the bottling line, semi-manual, are very old and irreparable due to the lack of original spare parts. It should be emphasized that this constraint - one of the most serious - is practically common for all Ethiopian wineries.

The analyses laboratory is inadequatly equiped. There is no thermic plant. Buildings and services need almost total restructuration also in view of the hygienic standards that are required for food industries.

Wherehousing capacity and equipment are not adequate. The electric plant and distribution network does not meet the operational and safety standard.

Water supply is insufficient. The new tank under erection will not solve the problems unless water availability is increased (and there are hygienic problems with well water).

Sewerage network needs to be renewed and the external areas reorganized.

4.4.2 Conclusions

Theoretically this winery could be completely rehabilitated, or relocated or closed. The final decision for a suitable solution will be taken after a correct cost analysis in the general framework of the project outlines aiming at an overall re-organizational scheme for the Addis Ababa wineries and the creation of a new plant.

4.5 ASMARA WINE AND LIQUEUR FACTORY, ASMARA

4.5.1 Present situation and constraints

The winery produces and bottles wine (500-600,000 litres in 1984/85) from dry raisin, vermouth, sparkling wine, soft drinks and liqueurs. The latter activities are being transferred to another plant.

Total area, after a recent enlargement, is over 6,600 sq.m. and is adequate for the factory requirement. Covered area is 1,100 sq.m.

Personnel: 23.

Total utilizable capacity of containers is about 1,330 hl, taking into account that a number of wooden barrels need to be restored.

The equipment fo wine processing and bottling are not adequate both from the point of view of capacity output and technologic requirement. Consequently during the process certain operations are not performed (e. g. cold stabilization) or are carried out manually (e.g. bottling and bottle washing).

However, part of the equipment and containers are still in good condition. The material and equipment in bad condition or out of use are listed in the Annex 4/D.

The condition of the buildings (constructed 1974) is considered good, because of a good maintenance. However a partial internal restructuration is suggested.

Electric network is not adequate by the point of view of operational and safety requirement. Water supply and sewerage are adequate.

4.5.2 Conclusions

Provided with additional and more efficient equipment, this factory can be put in the condition to continue and increase its production. Almost all the products are marketed in Eritrea.

5. SUPPLY OF RAW MATERIAL

5.1 GENERALITIES

For the Ethiopian wineries the main objectives are:

- increase the production in order to meet constantly the domestic po - tential demand;
- improve the quality of the wine in order to increase exports.

As previously exposed, since the most recent year Ethiopian wineries are not in the condition neither to face the actual consump - tion requirement nor to improve quality, nor to export at a reasona - ble level.

It is worth reminding that the main constraints hindering these targets are represented:

- by the henceworth limited productive capacity of the wineries, work - ing mostly with old and/or not sufficient equipment and/or in restric ted sites;
- by the very poor use of fresh grape as a raw material in the proces sing cycle, due at its turn to the low production from the existing E thiopian wineyards; as a matter of fact, in order to face the *quanti- tative* requirement of wine the use of imported dry raisin is beco - me (and will very likely remain for many years longer) a compulsary way.

Consequently the above two objectives could be achieved:

- by an overall restructuration and up-dating of the wine sector in its productive and organizational aspects;
- by a progressive and rapid development of the Ethiopian wineyards.

5.2 RAW MATERIAL AVAILABILITY

In the Ethiopian wineries, due to low grape production, wine is produced almost completely from imported dry raisin. The fresh grape, processed mainly in the Awash Lideta Branch is only the starting point of the whole processing cycle, being added to the dry raisin only as a yeast. In order to obtain wine in the required quantity and alcoholic degree, a high volume of sugar and water is added in the fermentation vats, plus citric and tartaric acid, biammonical phosphate, sodium benzoate and other similar products. Naturally, this kind of wine can hardly be accepted in foreign markets, especially in those countries already receiving wines from traditional wine producers.

Therefore the key problem for the Ethiopian wineries is represented by the absolute lack of fresh grape produced in the country.

In the last year (1984-85) the three Addis Ababa wineries used:

- 350 tons of fresh grape coming from the Ethiopian vineyards;
- 510 tons of dry raisin, imported mainly from Turkey, Pakistan and Cyprus;
- 1,470 ton of sugar coming from the Ethiopian Estate;
- 4,150 kg of tartaric acid, imported;
- 5,750 kg of citric acid, imported;
- 4,250 kg of sodium benzoate, imported;
- biammonical phosphate and some other imported enzymes.

Concentrated "must" is used occasionally and in modest quantities (5 ton in 1984/85) (Tab. 13).

Asmara Factory uses the same inputs, with the exclusion of fresh grape. It should be underlined that, in the Addis Ababa wineries, almost all the grape has been elaborated for account of Awash Lideta Branch for a production of wines of higher quality. Bottles are supplied by a local glass factory. Cork is imported, mainly from Spain and Portugal.

Tab. 13 - AWASH WINE FACTORIES : INPUT/OUTPUT TABLE , 1984/1985

MAIN INPUTS AND OUTPUTS	UNIT	QUANTITY			
		LIDETA B.	KETEMA B.	MAKANISSA B.	TOTAL
- Fresh grape	Quintal	1,908	886	706	3,500
- Dry raisin	"	3,726	838	504	5,068
- Sugar	"	8,490	4,263	1,968	14,721
- Tartaric acid	"	30.5	9.5	1.5	41.5
- Citric acid	"	35.3	16.0	6.2	57.5
- Sodium benzoate	"	23.5	10.0	9.0	42.5
- Concentrated must	"	50.0	-	-	50
- Wine, produced from fresh grape	Hl	7,021	-	-	7,021
- Wine, produced from dry raisin	"	47,062	22,958	11,900	81,920
- White wine	"	2,235	-	-	2,235

Source : E.B.C. (Ethiopian Beverage Corporation)

5.2.1 Present situation of the Ethiopian vineyards

Cultivation of grape is carried out under the control of the Horticulture Development Corporation (H.D.C.), a division of Ministry of Agriculture.

Most of the vineyards are located in the Shoa Province, between 35 to about 200 km from Addis Ababa.

They supply grape to the three wineries operating in the capital. Another vineyard is located in Eritrea (Elaboret), but does not supply fresh grape to the Asmara Wine Factory. At present this vineyard is under restructuration.

The vineyards in Zeway and Nura Era are considered the most important also because of their twice yearly harvests (January and July).

The remaing vineyards are located in Dukam, Gouder, Debra Zeit and Abadir. The latter is at present uprooted.

To appraise the real possibilities for future development of the Ethiopian vineyards, IFAGRARIA team carried out a research with the collaboration of the Horticulture Development Corporation and the E.B.C.

At first all available statistical data and information about present and expected grape production were collected. Then the wine machinery expert - who is also an agronomist specialized in viticulture - visited the vineyards in the Zeway and Dukam areas.

The results of this investigation are reported in the Annex n. 5 and can be summarized as follows:

- Areas and soil characteristics: there is a wide availability of suitable areas with favourable climatic conditions and very good pedologic characteristics of the soils.
  Therefore a considerable extension of the vineyards is possible. Of course a rational selection of only the most suitable types of vines will be suggested, after correct soil analyses have been made.
  Priority should be given to those sites in which two harvests per year are possible, like is Zewai and Nura Era.

- Cultivation techniques: can be improved by:
  a) avoiding cultivating in the same vineyard of different kinds of vines, especially when not compatible as regards ripening and harvesting times;
  b) reorganizing the vine planting forms - at present mainly in rows or at "alberello" - possibly giving the preference to "Guyon" method;
  c) applying a more rational and effective pruning, taking into account that the present techniques cause a serious quantitative decrease in the grape harvest;
  d) practising anticryptogamic treatment, at present almost omitted or not carried out at the right time.
  e) improving the system of irrigation, when applied;
  f) carrying out more effectively and regulary all other complementary but important operations such as: disking, ploughing, manuring, harrowing, etc.;
  g) eliminating or minimizing the serious damages caused to the fruit by the birds, by adopting suitable measures like ultra-sound devices.

- Problems regarding grape transportation to the Addis Ababa wineries:
  Vineyards supplying Addis Ababa wineries are, as previously said , located in the Shoa Province at distance varying from 35 to about 200 km. Roads are in good condition, but grape transportation is presently meeting some problems, due fermentation and oxidation phenomena involving the product quality. Moreover transportation costs are high.
  Consequently, IFAGRARIA team is took into consideration the opportunity to create small "musting" centres in the main vineyards, especially in view of their expected development.
  The equipment, later on described, would be relatively simple and would decrease considerably transportation costs.
  The proposed transport system is technically well conceived in order to ensure the maximum biologically safe conditions. The tanks are provided with special safety valves with the purpose to avoid, during transportation, explosions in presence of carbon dioxide caused by the continuous motions and by the possible start of fermentation.In order to hasten the unloading of the must at the winery the tanks are also provided with hatchways of suitable size.

5.2.2 Present and expected grape production

According to data provided by H.D.C., in 1985 grape production from the Ethiopian vineyards was around 3,800 quintals, out of which 3,500 processed in the Addis Ababa wineries.

As regards future output, the 10 year Indicative Plan has the following targets:

YEAR	HECTARES	PRODUCTION (q)
1984/85 (^)	296	2,610
1985/86	351	6,510
1986/87	474	8,160
1987/88	594	11,850
1988/89	634	15,450
1989/90	784	17,650
1990/91	954	21,150
1991/92	1,004	26,250
1992/93	1,054	27,750
1993/94	1,155	29,250

According to this programme average yields would increase from about 9 quintals of grape per hectare to over 26 q/ha.

(^) Corresponding to the year 1977 of the Ethiopian Calendar.

However, most recent research of the Horticultural Development Corporation (10-year Plan was studied in 1984), supported by positive results from experimental cultivations, show that the planned targets can be increased due to considerable improvements in the cultural techniques, with favourable results on the average yields per hectare, and to a steady extension of the cultivated areas, especially in Zwai and Nura Era, where two harvests per year are obtained.

The previsions in the short term are the following (^):

	1986	1987	1988
Hectares	335	435	485
. in full production	100	120	235
. in growing production (young)	54	115	100
. newly planted or with no production	181	200	150
Hectares with two harvests	(173)	(223)	(2...
Total production in quintals	8,550	10,590	17,17(
. average yields, excluding newly planted areas (q/ha)	55.5	45.1	5

The full production of 485 ha foreseen for 1988 will be obtained in 1991. Therefore, even with the assumption that no further area will be planted, the total output would reach a level of about 23,800 quintals in 1989, 27,800 quintals in 1990 and almost 36,000 quintals in 1991.

In the latter year the average yield, taking into account that 60% of total cultivated area will produce twice per year, would be about 74 q/ha.

(^) With the exclusion of Elaboret Vineyard (Eritrea), and taking into account that Abadir vineyard is uprooted.

The grape output projection in the short (1990), medium (1995) and long term (2000), have been made by the IFAGRARIA team on the basis of the following criteria:

a) improvement of the above production levels starting at least from 1987-88, also in relation to the successive point d);
b) possibility to exploit a total area of 1,300-1,500 ha, also as an extrapolation of the targets foreseen by the 10-year plan (1983-84 : 1,155 ha);
c) priority for an expansion of vineyards (Zewai, Nura Era and eventually new ones) giving two harvests yearly;
d) full respect of all cultural techniques recommended by IFAGRARIA experts, having recourse - if necessary - to a reinforcement of the existing experts and the qualified labour.

The results are hereafter presented according to a first hypothesis based on the maximum possible development of grape production (high assumption) and a relatively more conservative hypothesis to be retained as an average assumption (see Tab. n. 12)

Y E A R	AVERAGE-HIGH ASSUMPTION (quintals)	LOW-AVERAGE ASSUMPTION (quintals)
1990	35,800	32,500
1995	71,550	60,000
2000	90,000	75,000

In the above mentioned Tab. n. 12 additional data on the correspondent theoretical wine production from fresh grape and the expected exports have been included also with the purpose to complete projections of wine total demand (see chapter 3: Market Study).

5.3 THE USE OF OTHER RAW AND AUXILIARY MATERIALS

Ethiopian wineries use, at present, dry raisin as the most important raw material for wine production, since the low grape domestic availability (less than 4,000 q. in 1985) and the high purchase price (between 1,30 and 1,45 B/kg) do not allow an economic and competitive production of high quality vintage wine (1).

Other inputs for wine industry are: sugar and chemicals.

5.3.1 Dry raisin and its alternatives

Dry raisin is mainly imported from Turkey, at average prices of 2.55 - 2.75 B/kg at the factories (2)

According to data collected by IFAGRARIA team at the Ethiopian wineries (and information given by E.B.C.), dry raisin is used in the proportion of around 6 kg per hl. of wine.

The use of dry raisin - instead of fresh grape - presents two negative aspects: the first for the national economy, viz an expenditure of foreign currency, the second for the wine kind and quality, hardly accepted abroad.

The relatively positive aspect is represented by a lower production cost, viz an economic viability for the factories of using this kind of raw material. Higher advantages, at least for the wineries, could be achieved, should import custom duties be reduced (with a correspondent decrease of the national revenues).

The Consultant is, of course, quite contrary to suggest to produce, in the country,even if possible, a kind of grape suitable to be dried.

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(1) Italian wineries purchase grape for wine production at prices varying from 350 t 550 lire/kg (0.40 - 0.65 B/kg), according quality and region.

(2) Custom duties are around 45 - 50% of C.I.F. price.

Since it was proved that the future wine demand will not in any case be satisfied using only fresh grape coming from the national wineyards (even in the more optimistic assumption on their development), the Consultant has considered the possibility for the Ethiopian wineries to use *concentrated must*, to be at any rate imported.

This supply can be used, at the limit, even in total substitution of dry raisin; or as a third kind of raw material, together with fresh and dried raisin.

Undoubtedly wine from concentrated must - in association or not with fresh grape - would be in any case considered, and would have the characteristics, of good quality wine from fresh grape.

However, the importation of concentrated must is practically an importation of wine, since the "final" commercial product is simply obtained only by adding water in order to reach a normal alcoholic degree. In fact, concentrated must is usually imported by many consumer countries in order to save transport costs, of course higher for wine.

Morever, the import in Ethiopia of concentrated must, would meet serious constraints for its transportation from Assab to the wineries, due to the absolute unavailability of special tanks (1).

In conclusion this solution must be rejected and eventually be reconsidered in the future, in better infrastructural condition, and only as an integration of fresh grape, mainly for wine export, and of dry raisin, for an improvement of wine quality to be sold on the domestic market.

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(1) It is worth remarking that it is normally required from 25 to 35 litre of must per hl, according to the planned alcohol content, and that every transport delay (from Assab) would cause heavily negative effects both in the costs and in the proper must preservation. In Italy the average market price of the concentrated must is 4,200 Lire per degree Baumé, the lower price in Europe. The production cost of 1 litre wine (in bulk) from must at 33° is around 480 Lire (0,56 Birr, in comparison with an average cost of around 1 B/l, using dry raisin, sugar and chemicals).

5.3.2 Other inputs

Ethiopian wineries use a high quantity of *sugar* (about 16 kg per hl of wine), coming from the Ethiopian Sugar Estates (Wonji) . Purchase price is around 1 B/kg.

Several *chemical products* are used in the wine processing:

- *citric acid*, in the proportion of 60 - 70 gr. per hl of wine, at the unit purchase price of 5.30 B/kg at the factory;
- *tartaric acid* in the proportion of 45 - 50 gr per hl of wine, at the unit purchase price of 4.75 B/kg at the factory;
- *other products:* sodium benzoate, bentonite, sulphur dioxide, etc.

All chemicals are imported from various countries and are charged with a custom duty equal to 30% of C.I.F. price.

5.4 SOME CONCLUSIONS

1) *Expected and possible grape production*: targets between 75,000 and 90,000 quintals can be reasonably achieved in the long term (year 2000), should all the recommended cultivation techniques be followed with the constant support of H.D.C. and the involved Authorities . Theoretically higher grape outputs could be reached, since climate and soil characteristics are favourable.Also suitable additional areas could be exploited. However, in view of the prioritary necessity to increase the country food crops supply, there will be unavoidable and serious problems on the more convenient alternative.

2) *Delivery of grape to the wineries:* the Consultant suggests a full *co-ordination between H.D.C. and E.B.C.* with the purpose to meet the following advantages:
   - common studies and research for the improvement of the cultural techniques and on kind, quality and location of vines in direct connection with the industrial process requirements;
   - co-ordination in the cycle production (in quantity and kind) - transportation - delivery, under the care of the E.B.C.;

. and, as a consequence, a reduction of the prices paid by E.B.C. tc H.D.C. for grape supply: these prices would correspond rou - ghly to the production costs of the grape, eventually only in - creased in order to allow the H.D.C. to use a certain margin to be destined to the research. At present, the E.B.C. com - plains for the to high purchase price of grape and considers mo re convenient the use of dry raisin in wine making (1).

This vertical integration is commonly followed by many food and non food industries, like sugar, processed fruits and vegetables, co - coa products, cotton, etc. were production and processing are often under the same public or private property or co-operative. From the economic point of view there are no disadvantages.

3) *Use of concentrated must*, also in partial substitution of dry raisin: is not, for the moment, advisable, due to the lack of the special structure required for its transportation.

(1) It is observing that in 1984/85 not all the grape output was utilized by the wineries (350 t out of 400-450 t).

6. PLAN OF THE PROPOSED INTERVENTIONS AND STRATEGIES OUTLINE

6.1 GENERAL

It was previously said (Chapter 2) that the Ethiopian wine - ries are no longer in the condition neither to face the growing domestic consumption, nor to develop exports to a reasonable level. The poten - tial domestic demand is increasing due to the double effect of population rate of growth and of per capita consumption, at present very low (a litt le more than 20 centilitres per year, viz a common glass of wine), espe - cially in comparaison of that observed in many other Africa countries , wine producing or not producing (see Chapter 3).

Exports cannot be successful since the quality of the Ethio - pian wine - made mainly from dry raisin - does not meet the requirements of the foreign consumers or the International regulations on wine process ing and trade (see Chapter 3 and 5).

In order to develop, quantitatively and qualitatively, wine production accordingly to the parallel development of the potential do - mestic demand in the short, medium and long term (see point 3.4) and to the real perspectives of the exports, two main targets have to be a - chieved:

- an overall restructuration and reorganization of the existing wine pro cessing sector;
- a parallel program aiming at a strong and rapid development of the E - thiopian vineyards.

In this chapter, technical, operational and organizational ac tions are proposed for the achievement of these objectives.

6.2 OUTLINES OF THE PROPOSED INTERVENTIONS

The general plan outlines can be summarized as follows:

1) Partial restructuration of *Awash Lideta Winery* with the purpose to specialize it only as a subsidiary wine bottling unit, when the new plant becomes operational. Meanwhile the factory will continue producing and bottling wine.

2) Temporary rehabilitation of *Awash Makanissa Winery*, which will continue producing wine until the productive capacity of the new plant reaches a certain level (about 2-3 years after starting of project implementation works). Meanwhile Makanissa factory will utilize temporarely almost the newly supplied equipment, afterwards destinated to the new plant, with the possibility to produce,even operating in 3 shifts, the quantity of wine necessary, together with that produced temporarely by Lideta, Addis Ketema and Asmara wineries, to meet the wine demand in this first stage (^) .

3) No intervention on *Addis Ketema Winery*, which will cease production . The complete rehabilitation or relocation of this factory has proved to be not feasible from the economic standpoint, especially in view of the establishment of the new plant.

(^) It was assumed that year 1986 will be devoted to mobilize the financing sources and to carry out the executive project, whereas years 1987 and 1988 will be engaged to the project implementation works (see later the project time schedule).

4) Partial rehabilitation and integration of *Asmara Wine Factory*, which will continue its activity, also increasing production in order to face the regional demand. It is foreseen that some equipment no longer utilized by the Addis Ababa wineries will be transferred to Asmara plant.

5) Establishment of a *new modern winery* in a suitable area to be selected by E.B.C. in Addis Ababa or its surroundings. Considering that at the time of the IFAGRARIA's mission, E.B.C. could not state the exact localization, the area to be selected must meet, in any case, the requirements later on specificated (6.6.1. and 6.6.3.1).

Taking into account the general structural plan outlined above, two territorial wine producing and marketing systems will be operational in Ethiopia. The first is represented by the Addis Ababa wineries : 3 in a first stage (Lideta, Makanissa, Ketema) and 2 afterwards (Lideta and the new plant), which will command - on the basis of common and interconnected actions - the market (including exports) and consumption requirement of the national territory, save the Eritrea Region.

The second is represented by the Asmara Winery, which, duly restructured, will produce mainly, for the moment, for the Eritrean market.

However the economic analysis will be carried out in a "consolidated" form, for the whole project, taking into account the planned strict operational interdependence between the restructured units (Awash Lideta and Asmara Wine factories) and the new plant. It includes:

- complementary bottling activities between Lideta Winery and the new plant;
- temporary supply of new equipment to Makanissa Winery and its subsequent transfer to the new plant;
- other exchanges of equipment between Lideta, Makanissa and Asmara factories;
- common sales of bottled wine carried out by Lideta Winery and the new plant;
- common sales and marketing policies, etc.

The use of the a growing volume of dry raisin throughout the lifetime of the project will be unavoidable should the expected global demand of wine be wholly satisfied.

As previously observed the 10-year Indicative Plan has foreseen an output of 29,250 quintals of grape in 1993/94, exploiting 1,155 ha (about 26 q/ha). In the light of most recent research and programmes the H.D.C. is of the opinion that this target will be considerably increased especially in longer term, taking account of the recommendations of Ifagraria Experts as far as the improvement of cultural techniques is concerned.

The targets of 75,000 and 90,000 quintals of grape (according to the two assumptions) within the year 2000 must be considered reasonably realistic.

In spite of that, the share of wine from fresh grape (=global demand) will be only 17% in the period 1995-2000.

A total demand of 263,000 hl. of wine in the year 2000 (1st hypothesis), would involve an availability of about 480,000 quintals of fresh grape, to be produced in about 6,000 - 7,000 ha, with an optimistic but possible average yield of 74 q/ha (now 8-10 q.; in 1993/94, according to the Plan, 26 q.).

A demand of 290,000 hl (2nd hypothesis), would involve about 530,000 q. of grape on about 7,000 - 7,500 ha.

At the time of Ifagraria mission, the H.D.C., with the assistance of Ethiopian and foreign experts, was already studying a plan of action for a further development of the vineyards.

Therefore, in the long run, these targets could be theoretically achieved. Of course, as observed both by H.D.C. and E.B.C. staff, there will rise also socio-economic alternatives to exploit available new areas also for other prioritary food crops.

In this framework a separate feasibility study for each plant would involve certain methodological deep analyses which, according to the IFAGRARIA economist, would not reach a real practical result, taking also into due account that the whole Ethiopian Wine sector is managed by an unique institution, the E.B.C.

Morever the potential demand of wine was estimated for the whole national territory.

The proposed actions regarding each of the existing wineries and the new plant are presented in the following sections.

All required equipment are listed, in full details, by plant, in Annex 6 . The equipment, with their characteristics, are presented by processing stage or plant section. The relativeprices are also grouped by stage or section: they are expressed in Italian Lire, CIF - Assab,and in the correspondent cost in Ethiopian Birr, through US Dollar (1 $ = 2.07 Birr and 1,762 Italian Lire, average IV Quater 1985) and include assembling and start-up costs for certain equipment. The " final " cost of all equipment - at plants area - will be calculated in the Chapter 7 (Financial and Economic Aspects).

For each plant - including the new winery - a complete list of proposed equipment has not been reported in the main text, in order to avoid repetition, since the full description of the single items can be referred in the above mentioned Annex. Only a brief description of the interventions by processing sector will be carried out, together with the eventual mention of the main equipment.

Interventions on areas, buildings and other proposed civil works will be duly exposed.

At last, a planimetry of each restructured factory is annexed, so it will be possible to check the interventions, comparing these planimetries with those representing the present situation of the existing wineries (see Chapter 4).

6.3 REHABILITATION AND RESTRUCTURATION OF AWASH LIDETA WINERY

In view of the establishment of a new modern winery, Lide - ta factory, will be become a subsidiary bottling centre:

a) for best quality wines, produced in the new plant starting from 1989, to be mainly and with priority, destinated to the foreign market and also for domestic consumption (high income classes, hotels, restau - rants); therefore this kind of wine will be only made with fresh gra- pe;

b) for common wines, mainly made from dry raisin, to be sold on the do - mestic market.

6.3.1 The proposed actions

6.3.1.1 Interventions on processing cycle.

Taking into account that, in the long term,the joint bottling activity of Lideta factory and New plant will reach high levels (to face a total wine production from 23 to 26 million litres) the main interven - tions on Lideta Winery will regard especially the wine stocking and refri geration sector and the bottling activity and capacity.

The proposed interventions are summarized below:

a) Up-dating and later enlarging (higher capacity and power) of the *re - frigeration and stocking equipment.* Among other equipment a new re - frigerator, 12 isothermic steel vats (each with a capacity of 250 hl) for wine stabilization and a microfiltration plant (to be used when pasteurization is not applied) will be supplied.

b) Reinforcement of the *bottling sector,* in view of a growing activity . One can quote the supply of a new thermic power station, 4 steel vats of 250 hl, for the transfer of wine to the filling machines, a little plant for azote automatic injection, filling machines and other auxi- liary equipment for bottling.

c) Integration of the *ancillary equipment,* such as water supply and trea tment system, for workshop and analysis laboratory, for the electric

system and network; conveyers, transpallets, forklifts, hand carria - ges, piping, etc.

d) Integrations not included in the annexed list, viz: vehicles (1 truck), other non-technologic equipment and furniture for offices, warehouses production areas, services, etc.; and a strategic stock of spare parts for equipment and vehicles in order to face the requirement during at least two years of normal operation.

e) Repair and extra-maintenance works on existing equipment, taking into account their present conditions, described in detail in the Annex 4. Repair of cement vats are included in the interventions on civil works.

6.3.1.2 Interventions on civil works

In order to face the growing activity of the winery, the following interventions are proposed:

- elimination, if possible, of the passage right to reach the Finland Ambassade and the Macaroni factory (^);
- elimination of the precarious buildings in the eastern area, on which a new warehouse for empty containers will be erected, releasing a part of the semi-underground floor through an enlargement of the processing area;

(^) The measures to be adopted have been already studied by IFAGRARIA Team (Civil Engi - neer).

- modification of the project regarding the new warehouse, lowering the floor to road level, in order to use forklifts, by building a sloping ramp for the loading level and enlarging the storage area;
- interventions on the main building; in particular: the paving of the processing area, all coatings in gres or maiolica, the fixtures, varnishing and internal coating of the cement enologic vats to be restored or renewed;
- demolition of the old raw material warehouse and the nearly two little sheds, which can be rebuilt to new standards;
- covering with a metal shed of the empty bottles reception and stockage area, also with the purpose to get free the semi-underground room for an enlargement of the production area;
- connection with a metal shed between the present loading area and the finished product warehouse, under construction;
- restoring or renewal of the whole electric distribution network, to modern operational and safety standards, with particular care for the ground lines, the general and secondary switchboards ;
- revision of the sewerage network;
- general settlement of the external areas, to be asphalted, taking into account the slopes for rain water drainage.

The plan of the proposed new layout is shown in Annex 7.

6.4 TEMPORARELY REHABILITATION OF AWASH MAKANISSA WINERY

According the wine production program, linked to the forecast development of the demand, Makanissa Winery will be put in condition to produce more than 6 million litres wine in 1987 and about 12 million litres in 1988. In the following year the New Plant will start production (12 - 14 million litres) and the new equipment temporarely supplied to the factory to face high production levels will be transferred to the new plant in due course.

6.4.1 The proposed actions

6.4.1.1 Interventions in the processing cycle

The factory can reach the above production level only by utilizing almost all newly supplied equipment, with a certain contribution of

the existing equipment, duly repaired and restored (^), since the remai - ning equipment are out of order or obsolete.

These are the proposed actions.

a) Reconstitution of the *wine-making lines* (in white, in red and for dry raisin). Among other equipment, one can quote: equipment (and accessories) for grape pressing and disteming, including a continuous pressing machine for pomace exhausting, an inclined separator, a series of press - separator - extractors, a new power plant, various types of pumps and piping .

b) Integration of the *must movement sector*, with a new series of pumps of various types and capacities new fixed and mobile piping , a sugar melting plant, etc.;

c) Reconstitution of the *second fermentation sector*, which includes a series of stainless steel vats, with capacities from 25 to 300 hl, a refrigerator for must, etc.;

d) Reconstitution of the *filtration sector*, through the supplying of a series of filters of various types and capacities, an automatic mixer for chemical products, etc.;

e) Integration and up-dating of *ancillary units and equipment*, such as the workshop and the analysis laboratory, the water supply system, the electric network, etc.;

(^) See following letter (g).

f) Supplies not listed in the Annex, such as a strategic stock of spare parts for equipment and strictly necessary integration of furniture and other non-technologic equipment;

g) Repair and extra-maintenance works on existing equipment in relation to Annex 4.

Not all the newly supplied equipment will be transferred to the new plant: some will remain at the factory due to practical problems for disassembling and transfer or because of their nature for example;the weigh-bridge, some fixed piping, the integration of water supply system , of workshop and laboratory.

6.4.1.2 Interventions on civil works

In view of closing this factory, the proposed interventions are limited to those strictly necessary for less than two years operation. They are the following:

- various interventions on the old main building;
- settlement of the external areas;
- revision and integration of the electrical network of the external water supply and sewerage system.

The plan of the proposed new layout is shown in Annex 8.

6.5 PARTIAL REHABILITATION AND INTEGRATION OF THE ALMARA WINE FACTORY

The proposed actions will put the winery in condition to improve and increase wine production for the regional market. Since a restructuration of the existing vineyard (Elaboret) is not, for the moment , foreseen, almost all the equipment suggested are connected with the production of wine only from dry raisin. However the specific equipment for fresh grape reception and processing have been already selected and evaluated in the case of a future availability of grape.

6.5.1 The proposed actions

6.5.1.1 Interventions on the processing cycle

The interventions hereafter briefly exposed aim also at a conversion of many processing technologies till now carried out by hand. The interventions and equipment updating will also solve the problem of a future increase for wine output.

The action will concern the following processing sectors:

a) Reconstitution of the *wine-making line*, through the supply of more rational equipment, such as an inclined separator, a continuous pressing machine for the pomace exhausting, some press - separator - extractors in stainless steel and other necessary ancillary equipment.

b) Integration of the *must movement and filtration sector*, with the supply effective and modern pumps, a sugar melting plant, a refrigerator for must, a small power plant for azote injection, etc.

c) Integration of the *filtration sector*, with a series of modern filters of various kinds and capacities.

d) Integration or practical reconstitution of the *secondary fermentation sector*, with new lines of steel vats (capacity from 25 to 300 hl).

e) Creation of the *refrigeration sector*, with a refrigeration unit, a line of isothermic steel vats for wine stabilization, a microfiltration plant and other auxiliary equipment (piping, conveyers, etc.).

f) Establishment of a *new bottling line*, mainly formed by a thermic power station, a macerating-washing machine, steel vats for wine transfer to the filling machine, a pasteurization plant, all the equipment for filling, corking, labelling and packaging, and other ancillary equipment, inclusive a steam, water and a compressed air plant.

g) Other interventions and integrations in the *services sector*, in water supply and treatment, workshop and laboratory equipment, electric network; supplying of transpallets, forklifts and hydraulic carriages, office equipment, etc.

h) Supplies not listed in the Annex, such as a truck, spare parts for equipment and vehicles and other non-technologic equipment and furniture for offices, warehouses, etc.

i) Repair and extra-maintenance works on existing equipment, in relation to Annex 4.

6.5.1.2 Interventions on civil works

Some of these interventions are suggested by the prevision of a growing wine production and bottling in line with the forecast regional consumption development.

The proposed actions are:

- a general settlement of the external area;
- the restoring and some integration of the existing building, including repairs to roofing;
- the restoring of a part of cement fermentation vats.

The plan of the proposed new layout is shown in Annex 9.

6.6 THE NEW WINERY

6.6.1 Erection stages

The new plant will be realized through the following stages:

A) *Acquisition of an area* of 50-60,000 sq.m. within Addis Ababa or its environment on level ground, provided with the necessary infrastructure (access roads, power and water supply, sewerage, labour housing and social facilities).

B) *Erection of the factory* based on a modular system, for an initial production capacity of about 150,000 hl with a stock holding capacity of 65,000 - 70,000 hl of wine.
At this stage the vats and reservoirs and other equipment temporarely supplied to Makanissa Winery will be transferred to this plant and Makanissa will cease activities.

C) *Installation of a modern bottling line*, with a capacity of 8,000 litres/hour suitably equiped to facilitate the filling of alternative containers such as 2-litres bottles and kegs for draught wine consumption (1). This unit must start its activity before the bottling line of Lideta Winery reaches saturation point.

D) Creation at the main vineyard of a first *Centre for the preparation of must* (capacity: 12,000 q. of grape), in order to transfer must, instead of grape, to the wineries. The cost is relatively low and would show a saving.

E) *Successive enlargements of the plant* (further modules), constantly related to the wine production program from fresh grape and dry raisin, which in turn is linked to the expected development of the domestic potential demand and possible exports, and therefore to the grape production. The enlargement regards:

a) *the grape reception section:* area and equipment will be in condition to receive up to 40,000 quintals of fresh grape. According previsions (see Table 12), this limit could be reached starting from 1990-1991. In the following years additional centres for the preparation of must (same unit capacity) will be created at the vineyards. As an alternative, this section could be put in condition, with additional equipment, to receive higher quantities of fresh grape:

b) *the wine-making section:* the equipment originally installed for the dry raisin processing, could produce over 250,000 hl, by shortening - if necessary - the fermentation cycle;

c) *the container section:* the foreseen capacity of the first module is 65-70,000 hl. In order to face further requirements (starting from 1990-1991, according previsions), additional external vats, each one with a capacity of 2,500 hl, have been planned. So the second module (10 vats for a total additional capacity of 25,000 hl) could be realized in 1991, the third in 1994 and the fourth in 1998.

In conclusion, the future enlargements of the winery will be represented by additional vats in the plant area and by additional "musting" centres in the vineyards area or a strengthening of the grape reception sector, all this without any modification or enlargement of buildings or areas.

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(1) At present these kinds of containers are not common on the Ethiopian market. However their future introduction would not meet any difficulty since their production could be carried out in the existing factories (glass, plastic).

6.6.2 Technological cycle and related equipment

6.6.2.1 Technological cycle

The technological scheme hereafter presented is based on the processing both of fresh grape and dry raisin. It was taken into account an increasing availability of fresh grape produced in the national vine - yards, duly improved and developed up to a possible, raisonable level between 75,000 and 90,000 quintals within the year 2000 (see Table 12). In spite of this relevant increase of grape output, the demand of wine will continue being faced also - and in major share - by the use of dry raisin.

Indeed, according the projections shown in Table 12 , the share of wine from fresh grape on the total wine demand will only reach 15 to 17% in the long term.

However it is worth adding that the above expected availability of grape would be sufficient to produce pure wine prioritarily destined to exports.

The technological cycle refers to a *separate* production of wine only using fresh grape and wine only using dry raisin, avoiding the technological process at present followed by the existing wineries.

The various phases of the cycle are schematically detailed below: they can be easily followed in the flow chart shown in the subsequent page (Fig. 5).

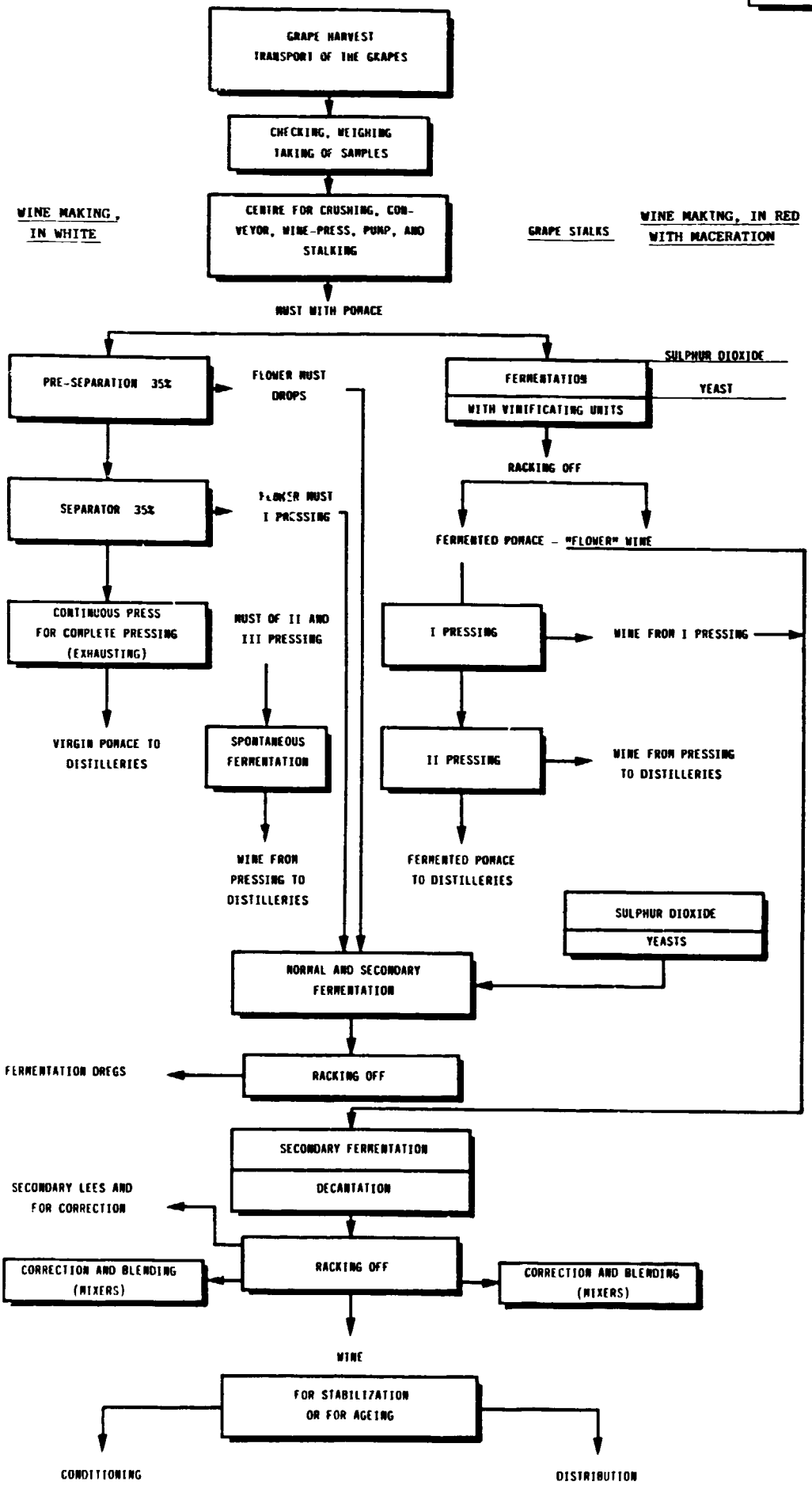
All machines, equipment and material mentioned during the description of the phases are listed in the Annex n. 6.

1. ***Reception of the fresh grape***

- weighing of the grape coming from the vineyards on trucks or vans, on a weigh-bridge installation;
- automatic extraction of samples with a jointed arm grab and their transfer to a refractometric station for the sugar content evaluation;
- transfer of the grape to the pressing - disteming lines by means of screw conveyers.

FLOW CHART 115/116

Fig. 5



2. ***Wine-making: first stage (common process)***

- pressing and disteming of the grape;
- expulsion of the stalks to the external area by means of a vacuum suction device, equiped with P.V.C. piping;
- transfer of the crushed grape to the vinification lines.

Starting from this stage the crushed grape will be processed accor - ding two ways: wine-making in white and wine-making in red.

2a) *Wine-making in white or fermentation without pomace*

- transfer by pumping of the crushed grape to the static press-separator-extractor and extraction of a first share (about (35%) of first quality must;
- extraction from the residual pomace, by means of a endless - screw separator of a second share (about 35%) of must , called prime pressing must (also considered first quality);
- transfer, by pumping and through a piping system, of these two shares of must to prime fermentation vats;
- pressing of the residual pomace, coming from the continuous pressing machine, and extraction of a third share of must , part of which will ferment spontaneously in order to produ - ce,after special treatments, a second quality wine, and part to be forwarded to the distillery;
- transfer by pouring off of the wine to the stocking reservoirs;
- transfer of the exhausted pomace to the external area by means of a screw conveyer.

2b) *Wine-making in red or fermentation with pomace*

- transfer by pumping of the crushed grape to the auto-vinificators for a partial fermentation (24-36 hours);
- extraction,by pumping, of the must or "flower" must, where skins have been already removed;
- transfer of the must, through a plate filter, to the secondary fermentation vats;
- extraction of the pomace from the vinificators by means of a screw conveyer and its transfer, with an other conveyer, to a separator;
- extraction of a first pressing must-wine from the press-separator and its transfer, by pumping, to the secondary fermentation vats;

- transfer of the pomace from the separator to a continuous pressing machine and extraction of a second share of must-wine (not suitable for table wine) for distillery use;
- transfer of the exhausted pomace to the external area.

3. ***Wine-making from dry raisin***

- reception and storing of the dry raisin;
- weighing of the raisin, according to the kind of wine to be produced (the transfer from the store is carried out with a screw conveyer);
- hot pre-washing, to remove all impurities (mould, dust, etc.);
- transfer of washed raisin to the vinificators;
- the adding to vinificators, by pumping, tepid water, sugar, tartaric and citric acid (these last three products were previously melted in proper mixer devices).

The successive pressing stages are almost similar to those concerning the red wine-making . Some specific additional equipment and a more careful assistance is required.
Fermentation time can be varied from 20-25 days ("slow" fermentation, at 18-20 degrees) to only 3-4 days ("tumultuous" fermentation, at higher temperature). In the first case better quality wine is produced.
Quality break-down of the must-wine is also similar to the red wine-making processing, but can slightly differ according to kind and/or origin of the dry raisin.

4. ***Final operations (common)***

- decanting and filtration, with diatomaceus (or pit flour), in order to remove dregs, residuals and other impurities;
- corrections with various treatments;
- blending with other wines ("cutting")(^)

(^) Blending can be applied, with careful technologies, to the must, viz in a previous stage.

- stabilization by refrigeration in isobaric stainless steel vats , fully insulated, commanded by a control which causes a sudden fall of the wine temperature, having two effects: physic-tartaric stabilization and artificial ageing (8 days equal to about 2 years of natural ageing);
- pasteurization (80°) with the effect to remove the active ferments;
- bottling (isobaric thermo-sterile) during pasteurization (^) ;
- packaging for sales.

5. *Special and supplementary operations during the various stages*

- injection of sulphurous anhydride into the must, in the way from pressing lines and fermentation vats, by means of an automatic distribution station, with the purpose to solve certain technologic , hygienic, bacteriological and organolectical problems;
- filtration of must before fermentation (prime and secondary), through a giant plate filter equiped with "lung" for additives;
- filtration of residual dregs, with the said filter, in order to obtain table wine and wine for distillery use;
- injection of nitrogen (azote) into the vats and reservoirs not entirely filled with wine;
- additionning of certain chemical products (bentonites, bicarbonate, ascorbic acid, gelatine, tannin, etc. according to the kind or colour of wine to be produced) to the must-wine during and/or after fermentation, by means of a special mixer (which can be used also for blending);
- control of wine and must temperature by means of a refrigerator at direct passage air/glicole.

(^) This system is preferred to the cold bottling with micro-filtration.

6.6.2.2 The equipment required

A complete detailed list of the proposed equipment is reported in the mentioned Annex 6.

A brief description, by processing stage or sector, will follow:

a) *Fresh grape reception:* the sector is formed by a weigh-bridge equipment, an automatic device for grape sample extraction and a refractometric station for sugar content evaluation;

b) *Wine-making lines*, in white and red, comprising of pressing - disteming units, overturning platform, automatic stalk expeller, pumps of various types and capacity and related piping sets, conveyers, equipment for the automatic dosage and distribution of sulphuric anhydride, etc.;

c) *Wine-making lines, in white*, with an inclined separator, a continuous pressing machine for pomace exhausting, pumps and auxiliary equipment;

d) *Wine-making lines, in red, for fresh grape and dry raisin*, formed by a series of press-separator - extractors in stainless steel (unit capacity 500 hl) duly equiped, an inclined separator, a continuous pressing machine for pomace exhausting and ancillary equipment (conveyers, elevators, filters, etc.);

e) *Must movement*, comprising of pumps of various types and capacity and related fixed and mobile pipings;

f) *Secondary fermentation*, constituted by a line of stainless steel vats, unit capacity from 25 to 2,500 hl, equiped with steel ladder, gangways; sugar melting plants, a refrigerator for must, a little central unit for azote injection, etc.;

g) *Must and wines filtration*, basically formed by filters of various kind and capacity and a mixer device for chemical products;

h) *Wine refrigeration*, with a refrigerator unit (120,000 Fr/hour), cooling water tower, a series of isothermic steel vats for wine stabilization, a microfiltration plant, an automatic decalcinator/water-softener unit and other auxiliary equipment (pipings, electric switch - boards, etc.);

i) *Bottling line*, compound of a thermic power plant with 2 boilers (1,200,000 Kg/Cal each), macerating-washing machine, pasteurizator , steel vats for wine stocking, filling machine, corking machines of various kind, labelling machine, automatic cardboarding machine and other auxiliary equipment, included a steam-water-compressed air plant;

j) *Various ancillary equipment*, among which: transpallets, forklifts , hydraulic carriages, air compressors, conveyers, equipment for smoke and chemical gas expelling, equipment for analysis laboratory and work shop, water supply and treatment system, electric equipment and net - work, office equipment (incl. air conditioners, etc.);

k) *Supplies not listed in the Annex, viz:*
   - 2 trucks (1 with trailer);
   - 2-3 cars;
   - strategic stock of spare parts for equipment and vehicles;
   - furniture and non-technologic equipment for all sections of the plant (offices, warehouses, guard house, workshop, laboratory , social services and processing areas).

   The equipment here briefly reported includes those temporarely sup - plied to Makanissa Winery.

6.6.3 Buildings and civil works

The works for the establishment of the new winery will be, of course, carried out following the erection stages detailed in the previous point 6.6.1.

The designs and planimetries, with relative lay-out of the wi- nery, are in the Annex n. 10, plans 1 to 6.

6.6.3.1 The area

As previously said the new winery will be erected in an area of 50-60,000 sq., taking into account of the further foreseen enlarge -

ments, required especially for additional steel reservoirs.

The area must be provided with:

- access roads, connected with the national network, especially for an easy and rapid communication with the main trade and industrial centres of Addis Ababa, which supply a large share of inputs and raw material, also originally imported, and with the national vineyards;
- an adequate availability of water in view of the high consumption required by the processing cycles; the aqueduct must be in condition to have a constant flow of potable water not lower than 2 litres/second. Water for "external" uses (washing, refrigerators cooling, steam production, etc.), generally drawn from wells, is required for a flow of at least 5 l/s (^);
- electric power, supplied by ΞΕLPA, with the possibility to transform the tension of 380/220 V; the supply must be in condition to face a power demand of about 700 KVA;
- facilities for the personnel (transport, housing, home supplies, social services), especially if the area to be selected rather far from the Addis Ababa urban settlements and their services.

The location (Addis Ababa zone) has, therefore been selected according to the market-oriented principle. The alternative solution to locate the new winery in the vineyards area (according to the raw material-oriented principle), as generally folloxed in the main European countries (France, Italy, etc.), will not be suitable, because the most important raw material is and will be, at least during the lifetime of the project, the dry raisin and not the fresh grape.

(^) Since the exact location has not yet chosen some marginal technical and economic problems will be solved later on. It is the case of possible treatments before and after utilization or whether waste water must be or not drained into the Municipal Sewerage network.

A location near the vineyards, (apart the absolute lack of the most essential commercial and technical infrastructure and facilities) would involve the transport from Addis Ababa of about all the inputs: dry raisin, sugar, auxiliary products (chemicals, etc.), bottles and other packaging material (corks, crowns, cardboard and plastic boxes), etc.

Moreover, most of the final product - the wine (included that for export) would have to be transported to Addis Ababa, with additional problems as far as transportation and its high cost.

Other problems are represented by the personnel, taking into account that the new plant will use practically the existing E.B.C 's personnel, at present living in Addis Ababa.

The following civil works are foreseen:

- general preparation of the ground (digging, levelling) for a depth of 50 cm for an area of 40,000 sq.m.;
- fencing and gate (800 m);
- paving of about 13,400 sq.

6.6.3.2 The general layout and the buildings

The layout is clearly shown in the annexed plans. It was designed on the assumption that there would be no constraint as to regard the availability and suitability of the selected area.

The sections are the following:

- shed , where grapes, from the vineyards, are off-loaded from tipper-trucks, and two holes for the pressing-disteming machines;
- wine-making section, containing the specific equipment mentioned in 6.6.2.2 and listed in detail in the Annex 6 (vinificators, separators; continuous pressing machines, pumps, filters, conveyers, etc.);
- secondary fermentation, filtration, refrigeration and storage sections, with fermentation steel vats, filters, refrigerator units, isothermic steel vats and auxiliary equipment, previously described;
- bottling section, with the relative equipment; warehouses for empty bottles and packaging material; and a checking box for the control of the goods' movement.

Suitably located, in connection to their functions, the following sections are also planned:

- store for dry raisin and sugar;
- store for chemicals;
- thermic power plant ;
- steam generators;
- refrigeration unit;
- workshop and store for spare parts;
- laboratory for analysis;
- hygienic services.

6.7 GENERAL CONSIDERATIONS AS REGARDS SOME SELECTED TECHNOLOGIES

The technologies proposed are those long since tested and followed in the European wine processing industries and in particular in Italy. Some changes have been suggested for local factors.

For example, automation has been reduced were not essential, in view of the availability of labour and the cost and the operative and maintenance requirements.

The technical solutions for the rehabilitation of the wineries have been proposed taking in due account the existing and still utilizable equipment when compatible with the selected processing cycle.

All the new containers proposed are in stainless steel, on account of their durability, handling (mounted on wheels in order to allow movements) and the practical absence of maintenance.

Their capacity varies from a minimum of 25 hl. to a maximum of 2,500 hl. (see Annex 6). The distribution by size has been planned in full co-ordination with the processing cycles. So tanks of higher capacity - especially for the new plant are destined to receive the programmed daily production of homogenous wine; whereas sets of tanks of lower capacity are used for fillings, blending of wines, and quality classification.

The containers of minor capacity (25 - 100 hl.) will be directly imported; those with higher capacity will be locally built, under the care of the supplier after importation of rolled sheet (coils), already cut and shaped for the successive assembling. The necessary welding machines - if not locally available - will be temporarily imported.

In general the containers, for climatic reasons, will be under cover. In the recent years all problems - operational and biological - flowing from the height and the volume of the containers have been solved also due to the improvement and/or addition of certain ancillary equipment.

The proposed works are:

- the main building (production area) (10,600 sq.m);
- the offices (630 sq.m);
- the guard house and watch post (160 sq.m);
- the weigh-bridge (70 sq.m);
- the personnel's services (270 sq.m);
- other ancillary works or constructions.

Following the layout, one can find the main entrance, with a steel gate provided with a check point. Soon after the weigh-bridge, built according to normal standards (swinging platform, weighing equipment), suitable for a double weighing (truck-in, truck-out); then the offices, provided with a shed for parking, the guard house and the personnel's services.

This zone is well separated from the production area, so visitors and personnel out of service have no occasion to interfere with the factory's work.

The industrial building is formed by an unique body, divided into several sections inter-connected. The front area shows the main yard for unloading and loading (fresh grape, dry raisin, exhausted pomace, finished products).

Other two secondary yards: one for the unloading of empty bottles and the other for the unloading of other auxiliary material (chemicals, etc.) and for the technologic services.

Of course the existing containers in concrete, steel or wood (Awash Lideta Winery and Asmara Wine Factory) will be used when in good condition (see Annex 4).

Pumps, filters, conveyors, piping and other main and auxiliary equipment (listed in the mentioned Annex 6) have been proposed in the light of a long experience in wine processing, according also to standard plants erected in other developing countries.

Should some elements (for example pumps and filters) if in excess at the erection time will be reduced. For example many filters have been planned for microfiltration, particularly suitable, after pasteurization, for wine to be exported (stabilized) ; so their number could vary according export levels.

6.8 IMPLEMENTATION SCHEDULE

It was assumed that the physical planned works for the rehabilitation of the Ethiopian wine sector could start in 1987, first project year, taking in due account that the implementation must be directly linked to the wine production program, at its turn strictly connected with the estimated projection of total wine demand according to the average - high hypothesis.

The proposed schedule, including preliminary operations, are the following:

a) in the last months of 1986 and, at any rate, soon after the determination of the financial sources;
   .. executive project;
   .. establishment of project management and works assistance schedule;
   .. tendering for the civil works:
      all these works (buildings, areas settlement,etc.) could be prioritarly entrusted to Ethiopian enterprises;
   .. tendering for equipment supply : all specific equipment for wine production must be supplied, by detailed bids, by highly specialized producers, taking however into account that the enologic equipment to be supplied must be technologically compatible with those at present used by the Ethiopian wineries, mostly of Italian origin;
   .. contacts with public Authorities for timely approval of licences, contracts, imports, etc.;

b) in the first months of 1987: order of equipment for existing wineries;

c) also in 1987: start up of all "physical" works and supplies for the rehabilitation of Lideta, Makanissa, and Asmara factories , and for the erection of the new winery, and in particular:
   .. start of civil works for all existing wineries and new plant;
   .. equipment assembling for all existing wineries;

d) towards the end of 1987: order of equipment for the new plant;

e) in 1988:
   .. equipment assembling in the new winery, including that for bottling plant;
   .. transfer to the new plant of the equipment temporarily supplied to Makanissa winery;
   .. establishment of the first musting centre at Zeway vineyard (year ending);

f) in 1991: erection of the new plant 2nd module (additional line of stocking vats);

g) in 1993: establishment of the 2nd musting centre:

h) in 1994: erection of the new plant 3rd module;

k) in 1996: estblishment of the 3rd musting centre;

i) in 1998: erection of the new plant 4th module and establishment of the 4th musting centre.

The time-schedule of the planned interventions and the projection of the total wine demand and production are shown in the Tab.13 and schematic Diagram at 13.A

Tab. 13 – TIME SCHEDULE OF PLANNED INTERVENTIONS ON ETHIOPIAN WINE SECTOR: PROJECTION OF WINE DEMAND AND WINE PRODUCTION PROGRAM

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
AWASH LIDETA																
Rehabilitation works																
Wine production and bottling (million litres)	5.4	5.4	3.5													
Wine bottling (1)																
AWASH MAKANISSA																
Temporary rehabilitation works																
Wine production and bottling (million litres)	1.2	1.2	6.8(.)	12.4(.)												
Wine production																
ADDIS KETEMA (2)																
Wine production and bottling (million litres)	2.2	2.0														
ASMARA FACTORY																
Rehabilitation works																
Wine production and bottling	0.6	0.7	0.7	0.9	1.0	1.0	1.1	1.1	1.2	1.2	1.2	1.3	1.3	1.3	1.4	1.4
NEW PLANT																
Erection works:																
.. 1st module, incl. civil works																
.. bottling plant																
.. 2nd, 3rd and 4th module																
Wine production and bottling (4)					13.8	15.5	17.2	18.7	20.2	21.5	22.7	23.7	24.8	25.8	26.7	27.7
MUSTING CENTRES																
Total wine production (million l.)	**9.4**	**9.3**	**11.0**	**13.3**	**14.8**	**16.5**	**18.3**	**19.8**	**21.4**	**22.7**	**23.9**	**25.0**	**26.1**	**27.1**	**28.1**	**29.1**
Total wine demand (million l.) (3)	**10.2**	**11.0**	**12.0**	**13.3**	**14.8**	**16.5**	**18.3**	**19.8**	**21.4**	**22.7**	**23.9**	**25.0**	**26.1**	**27.1**	**28.1**	**29.1**
Deficit	**0.8**	**1.7**	**1.0**	–	–	–	–	–	–	–	–	–	–	–	–	–

(1) As a subsidiary activity to New Plant bottling.

(2) No additional intervention has been foreseen. The winery will continue producing in 1986 with the existing equipment maintened like in the past.

(3) According the average - high assumption (Tab. 11).

(4) Including wine bottled by Awash Lideta Plant.

(*) Transfer of equipment from Makanissa Winery to New Plant

(.) Output obtained with the new equipment temporarely supplied to the Winery and operating in 2 or 3 shifts, according to the necessities, using the present personnel and external technical assistance.

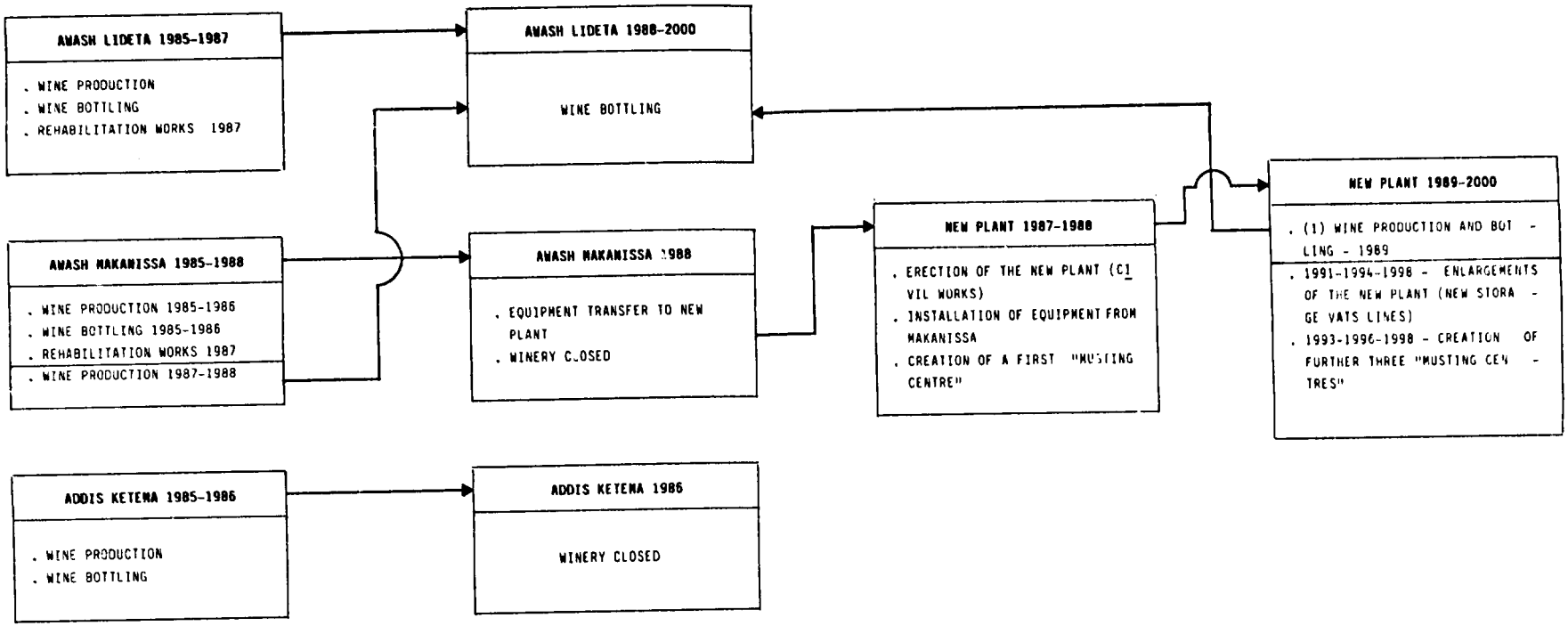
——— Erection works

—·—·— Wine bottling

– – – – Wine production and bottling

····· Wine production

Tab. 13.A - TIME SCHEDULE OF PLANNED INTERVENTIONS ON ETHIOPIAN WINE SECTOR



(1) Tranfer to Awash Lideta Winery part production for wine bottling.

6.9 ORGANIZATIONAL STRUCTURE

At present the Ethiopian Beverage Corporation is structured in order to co-ordinate all productive and commercial activities of the wineries.

Due to the restructuration and up-dating of Lideta and Asmara Wineries and, especially, the establishment of the new plant, the E.B.C. management staff must be adequately reinforced, particularly with the purpose:

a) to co-ordinate, manage and supervise the *supply of machinery and equipment* during the rehabilitation and construction period, from tendering or offer stage to delivery, assembling and testing;

b) to manage the timely *supply of raw and auxiliary material*, trying to obtain, through proper contracts, lower prices; and, in particular, to improve the co-ordination between H.D.C. and E.B.C. with the aim to guarantee a regular and timely supply of fresh grape and to decrease its purchase price;

c) to intervene in the *transport sector*, which involves both road conditions and means of transport availability: it should be reminded that, at present, the transport of imported goods (equipment, spare parts, raw material, etc.) from Assab is often carried out with long delays;

c) to constantly study the *wine market trends* both in Ethiopia and abroad, as widely explained in Chapter 3 and relative Annex n. 3.

d) to care and control the *productive cycle* through:
   - constant up-dating of *skilled labour* (equipment operators, mechanicians of workshops, vehicle drivers, etc.) as a follow-up of the planned personnel training and technical assistance program;
   - proper management program of the spare parts strategical stock (periodical replenishment, in order to avoid expensive stoppages of the productive flow, which are some of the most serious constraints for many industries in the developing countries.

7. FINANCIAL AND ECONOMIC ASPECTS

7.1 GENERAL

For the reasons explained in the point 6.2, the financial and economic analysis will be carried out for the whole project, in its consolidated approach, viz including all proposed actions regarding both the rehabilitation or integration of the existing wineries and the new plant.

Indeed, it is worth reminding that:

- Awash Lideta Factory, converted in a specialized bottling plant, will operate in strict connection with the new plant, not only as a subsidiary bottling unit, but also in the sales and marketing field;
- Awash Makanissa Factory will operate only during the first two or three project years (^) , utilizing new equipment later destined to the new plant.

Theoretically only the restructured Asmara Winery could be analyzed separately, but also in this case there will be exchanges of equipment; morever the firm will continue being centrally controlled by E.B.C.

This chapter will deal with:

- the investment costs according the programmed time-schedule of the proposed works;
- the annual operating costs for a period of 14 years, assuming 1987 the first project year and the year 2000 the last, taking into account that the estimated total wine demand - and the related sales - was projected in the brief, medium and long term;
- the sales;
- the consolidated cost/profit analyses;

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(1) In this analysis two years of production have been assumed. A third year could be necessary only if the initial production of the new plant will not be sufficient to cover the total wine demand.

- a brief economic analysis (some effects of the project on the national economy).

The main data and results are shown in a series of analytic and synthetic tables. Therefore comments and explanations will be limi - ted to a minimum, taking also into account that all tables are duly integrated with explanatory foot notes.

7.2 THE INVESTMENT COSTS

7.2.1 The selected methodology

The investment costs are grouped and classified according the current methodology adopted and recommended by the International Organizations, in view of the financial and economic analysis, which includes:

- the calculation of the "final" cost of each investment item or group of items, particularly for the imported capital goods;
- the calculation of the depreciation;
- the calculation of the maintenance costs;
- the replacement calendar for the renewable capital goods and their residual value at the end of the projected analysis period;
- the calculation of the necessary spare parts;
- a break-down between investment costs in foreign currency and local money;
- the working capital.

The investment costs have been calculated by plant, according the time-schedule hereafter presented.

7.2.2 Calculation of the investments "final" cost

The final cost includes:

- *the C.I.F. Assab* price of all imported capital goods, as a result of

supplier original list price, plus sea freight and insurance (1);

- the cost for *assembling* of plants and equipment carried out by the suppliers (specialized assemblers) with the aid of local labour; and, when necessary or required, the *running-in and testing costs* of the single equipment or the whole plant;
- the *custom duties:* the machinery, equipment and basic material destinated to agro-industrial initiatives will be free of these duties, according Ethiopian rules on the national economic plans. However, an average 3% charge on C.I.F. price was computed, covering other custom taxes;
- *landing, harbour, transit, warehousing costs and taxes:* estimated, after official sources and direct information given by operators, at 6-9% of C.I.F. price (2);
- the *transport costs* from Assab to plants areas: around 2% of C.I.F. price (2);

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(1) In this analyses it was assumed that goods will be transported with ships of the supplier country.

(2) In general costs data supplied by governmental sources are considerably lower than those actually supported on an average by operators. In line with the prudential criteria recommended for this kind of analyses, higher alternative has been chosen. It is worth underlining that for example the warehousing costs can daily rapidly increase in relation to the loading and transport delays.
This constraint often occurred in the past, due to not timely availability of means of transport.

- "physical" *contingencies*, viz covering possible evaluation errors in the chain of price from supplier factory to final cost at the wineries : 10% of final cost. "Price" contingencies, covering money rates of exchange or inflation effects have not been considered, since the investment costs projected in the future are expressed at constant price , and precisely at November 1985. Contingencies are applied to each investment item (and not to the total investment costs) following a methodology which allows more properly to carry out all subsequent elaborations required by the economic analysis (depreciation, maintenance , etc.).

Prices of imported equipment listed in the Annex 6 include CIF-price, assembling cost with suppliers assembler, running-in and testing expenses.

Investment final costs are expressed in Birr. Costs of imported capital goods (equipment) are expressed originally in Italian Lire (see mentioned list), converted in Birr on the basis of a rate of exchange of 2.07 Birr and 1,762 Lire per US Dollar.

7.2.3 Investment costs for the rehabilitation and restructuration of Awash Lideta Winery

On the basis of the technical project described in the previous Chapter 6, the investment costs for the proposed rehabilitation of this winery are the following (final value in Birr):

- Civil works	361,480
- Machinery and equipment	1,992,600
- Vehicles, for internal handling and external transport	218,900
- Spare parts	222,150
- Non-technologic equipment, furniture	175,450
- Repair and extra maintenance works on existing equipment	62,000
Total	**3,032,580**

7.2.4 Investment costs for the temporary rehabiltation of Awash Makanisa Winery

They are summarized as follows (final value in Birr):

- Civil works (strictly necessary)	132,800
- Machinery and equipment temporary supplied to the factory (equipment for a value of 2,979,780 Birr to be afterwards transfer - red to the new winery)	3,616,340
- Spare parts	325,710
- Non-technologic equipment (strictly necessary)	15,000
- Repair and extra-maintenance works on existing equipment (strictly necessary)	53,000
Total	**4,142,850**

7.2.5 Investment costs for the rehabilitation and integration of Asmara Wine Factory

Summarized as follows (final value in Birr):

- Civil works	220,000
- Machinery and equipment	2,669,900
- Vehicles (internal, external)	218,600
- Spare parts	275,520

- Non-technologic equipment, furniture	65,250
- Repair and extra-maintenance works on existing equipment	36,000
Total	**3,485,270**

7.2.6 Investment costs for the new winery

They are summarized as follows (final value in Birr):

A. First module (1)

- Civil works		
. Area settlement and other civil works, excluding buildings	527,340	
. Buildings	4,696,500	
		5,223,840
- Machinery and equipment		
. Total	10,404,700	
Less: temporarely supplied to Makanissa Winery (charged to the same)	-2,979,780	
		7,424,920

(1) Bottling and stocking activity of the new plant is strictly co-ordinated with that of Lideta Winery. Eventual extra works in peak period - especially in the long term - will be carried out by the two plants with more than one shift.

- Vehicles (internal, external)			542,400
- Spare parts	990,540		
Less: already supplied and charged to Makanissa Winery	-268,420		
			722,120
Sub-total			**14,276,830**
B. Successive modules (enlargements)			
- Additional equipment: three new lines of steel vats, in 1991 - 1994 and 1998, for a unit cost of 817,200 B, so for a total cost of			2,451,600
		Total	**16,728,430**

7.2.7 Investment costs for the creation of Centres for must preparation at the vineyards

As already exposed (6.6.1), as an alternative, the new plant could receive directly higher quantities of grape by enlarging, with additional equipment, its grape reception sector.

The final cost of a little musting centre, formed by the equipment listed in the Annex n. 6 , was calculated 201,850 B, including spare parts.

The first Centre, at the Zeway vineyard, will be created, according the fresh grape supply program, in the 2nd project year (1988) ; the second in the 7th year (1993); the third in the 10th year (1996) and the last in the 12th year (1998).

The total cost, therefore, will amount to **807,400 B.**

A more detailed analysis of all the above mentioned invest - ment costs, with the methodology followed for the calculation of the "final" cost, is shown in Annex n. 11 .

7.2.8 Costs for the exchange of equipment between the wineries

The higher cost is represented by the transfer to the new winery of the equipment temporarely (and in advance) supplied to Makanis - sa Factory in order to put it in condition to produce wine at high level, in the period preceding the start of new plant operation. The cost is formed by the transport (equipment for a CIF value of about 2.4 million Birr), the disassembling and reassembling costs (when necessary) estima - ted at 250,000 Birr.

The cost for other minor transfers of equipment (from Makanis - sa to Lideta, from Makanissa and Lideta to Asmara Wineries) has been roughly estimated at 20,000 Birr.

The total cost of this operation will amount, therefore, at 270,000 Birr.

7.2.9 Training of Ethiopian personnel and Technical Assistance

The Consultant is of the opinion that the training of Ethio - pian personnel and the technical assistance will concretely contribute to guarantee better results for the whole Project, since its implementation and initial operation. It should be emphasized that a large part of the newly supplied equipment, due to their technologic and processing characteristics, need an effective knowledge on their proper use and maintenance.

7.2.9.1 Training of Ethiopian personnel

The personnel to be trained can be represented by 5 Ethiopian E.B.C. enotechnicians or equivalent, also pre-graduated, to be sent in Italy.

On the assumption that the E.B.C. will include - as suggested by IFAGRARIA Team - some of the enotechnicians who in the past attended special stages in Italy, a period of two months can be considered sufficient.

In the different case a longer training period would be necessary (4-6 months). Also the number of the selected persons can vary according to the E.B.C.'s decisions.

Mission time will be devote firstly at an important and highly qualified enologic institute (for example, in Conegliano Veneto) for theoretical knowledge and up-to-dating, and then in a modern winery, for more practical purposes.

According to a formula, current in E.E.C. countries, the basic salary of this personnel is assumed to be paid in Ethiopia by the E.B.C. or the firm or organization to which the personnel is in charge (1).

The stay cost in Italy of 5 persons, for a period of 2 months, is estimated at 36 million Lire (120,000 L/day x 60 x 5); the air travels at 9 million Lire (5 return ticket at 1.8 million Lire) ; so in total 45 million Lire, correspondent to 52,850 Birr. Of course a higher cost - at any rate not affecting practically total investment - would be retained in case of different solutions.

(1) Of course possible different solutions can be adopted after proper agreement.

7.2.9.2 Technical assistance

The Consultant suggests a technical assistance supplied by 2 Italian experts, as follows:

- 1 expert in mechanics and assembling, during equipment assembling , start-up and testing (12 months);
- 1 expert in enologic processes, during the first 6 months of New Plant operation, also with tasks of eventual assistance to Awash Lideta and Asmara restructured wineries.

The relative cost has been estimated at 294,000 B, according conditions current in Italy and E.E.C. countries, viz:

- basic salary: 10 million Lire/month (about 5,675 US $);
- per diem: 150 Birr/day;
- air travels: 2 return tickets for the expert in mechanics, including a return ticket for a vacancy of one month, 1 return ticket for the expert in enologic processes.

7.2.10 Preliminary and other organizational expenses

A total of 140,000 Birr has been included in this investment, representing - but very likely not fully covering - only the cost of preliminary surveys and studies directly connected with the project. Other costs (for the executive project, yard organization, interim interest , etc.) have been not considered.

7.2.11 Summary of project investment costs

Total investment cost of the consolidated Project is 28,953,400 Birr, correspondent at about 14 million US Dollars, distributed as follows (in 000 B):

			%
- new winery (incl. equipment previously supplied to Makanissa Factory)	19,708.2		68.1
- Lideta Winery	3,032.6		10.5
- Asmara Winery	3,485.3		12.0
- Makanissa Winery	1,163.1		4.0
Total wineries		27,389.2	94.6
- Musting Centres		807.4	2.8
- Costs for equipment exchanges		270.0	0.9
- Technical assistance		294.0	1.0
- Training		52.8	0.2
- Preliminary expenses		140.0	0.5
Total		**28,953.4**	**100.0**

As noted, 94.6% of the total cost is represented by the wineries (68.1 % by the new plant).

The detail of the investment, by plant, item and year is shown in the Annex n. 12, Tab. 1.

The summary, by item and year, is exposed in the following Tab. n. 14 .

7.2.12 Time-schedule of the investment

In the two above mentioned tables, investment costs are also reported by year during the period of 14 years, from 1987 (1^{st} project year) to year 2000, on the basis of the implementation schedule shown in chapter 6.7 (Tab. n. 13).

Some explanations will follow.

Timing of cost for equipment is based on cash flows: the cost is imputed in correspondance to the time of the effective expected pay - ments, also in order to facilitate the calculation of the rate of return (discounted cash-flow). Therefore, following the procedure generally cur- rent in the international supplies, 25% of CIF-price of the imported e - quipment is assumed to be paid in advance, at order time, 65% at shipping (FOB) or arrival (CIF) and the remaining 10% at 3 to 6 months after acti- vity start, as a guarantee of normal equipment operational requirements.

Timing of other costs correspond, in general, to works or supplying period, according also the time-schedule of the successive in - vestments (enlargements of the new plant, creation of the "Musting" Cen - tres, etc.).

Preliminary and organizational expenses have been imported to the first project year, even if some of them were disbursed in previous years.

53.2% of the project total investment cost must be paid in the first year, 33.4% in the second year and the remaining costs in the following years (3^{rd}, 5^{th}, 7^{th}, 8^{th}, 10^{th} and 12^{th}).

Table n° 14 – SUMMARY OF THE PROJECT INVESTMENT COSTS, BY YEAR – 1987-2000

(in 000 Birr, at XI/1985 prices)

INVESTMENTS	TOTAL	1 (1987)	2 (1988)	3 (1989)	4 (1990)	5 (1991)	6 (1992)	7 (1993)	8 (1994)	9 (1995)	10 (1996)	11 (1997)	12 (1998)	13 (1999)	14 (2000)
. AREAS SETTLEMENT AND OTHER CIVIL WORKS	608.1	608.1	-	-	-	-	-	-	-	-	-	-	-	-	-
. BUILDINGS	4,696.5	2,817.9	1,878.6	-	-	-	-	-	-	-	-	-	-	-	-
. INTERVENTIONS ON EXISTING BUILDINGS	633.5	633.5	-	-	-	-	-	-	-	-	-	-	-	-	-
. MACHINERY AND EQUIPMENT INCL. GENERAL SERVICES (Ancillaries) (1)	18,917.0	9,354.8	5,796.4	742.9	-	817.2	-	190.4	817.2	-	190.4	-	1,007.7	-	-
. REPAIR AND EXTRA MAINTENANCE OF EXISTING EQUIPMENT	151.0	151.0	-	-	-	-	-	-	-	-	-	-	-	-	-
. COSTS FOR TRANSFER OF EQUIPMENT FROM PLANT TO PLANT (2)	270.0	-	270.0	-	-	-	-	-	-	-	-	-	-	-	-
. VEHICLES (Internal and external)	979.9	437.5	542.4	-	-	-	-	-	-	-	-	-	-	-	-
. SPARE PARTS (Strategic stock)	1,591.2	1,003.4	553.6	-	-	-	-	11.4	-	-	11.4	-	11.4	-	-
. FURNITURE AND NON-TECHNICAL EQUIPMENT	619.3	255.7	363.6	-	-	-	-	-	-	-	-	-	-	-	-
SUB-TOTAL	**28,466.5**	**15,261.9**	**9,404.6**	**742.9**	**-**	**817.2**	**-**	**201.8**	**817.2**	**-**	**201.8**	**-**	**1,019.1**		
. TECHNICAL ASSISTANCE	294.0	-	194.0	100.0	-	-	-	-	-	-	-	-	-	-	-
. TRAINING ETHIOPIAN PERSONNEL	52.9	-	52.9	-	-	-	-	-	-	-	-	-	-	-	-
. PRELIMINARY AND OTHER ORGANIZATIONAL COSTS	140.0	140.0	-	-	-	-	-	-	-	-	-	-	-	-	-
T O T A L	**28,953.4**	**15,401.9**	**9,651.5**	**842.9**	**-**	**817.2**	**-**	**201.8**	**817.2**	**-**	**201.8**	**-**	**1,091.1**	**-**	**-**

(1) Including steel vats and similar containers.

(2) Especially for the transfer to the new plant of all new equipment temporarely supplied to Makanissa Winery. Other transfers of some equipment have been also foreseen (from Makanissa to Lideta and Asmara Factory, from Lideta to Asmara).

7.2.13 Investment costs payable in local money and foreign currency

This break-down, which is basic for the selection of the project financial scheme and sources, is summarized in the Tab. 15 , integrated with explanatory foot notes.

It is worth observing that all expenses for supplies available in the country have been considered paid in local money, regardless of the origin . This the case of vehicles assembled in the country (with imported parts) and other goods and material, present in the Ethiopian market, but totally or partially produced with imported inputs. The cost of civil works and buildings have been totally considered payable in local money, in the assumption that all these works will be allotted to local enterprises, regardless of the origin of the used materials.

The cost of imported equipment has been imputed to foreign currency at their CIF-Assab price, since all additional costs (customs , landing, warehousing, transport, assembling cost with local labour, etc.) are payable in local money.

The cost for technical assistance was totally considered in foreign currency.

7.3 EVALUATION OF THE EXISTING CAPITAL GOODS

It should be reminded that wine production and/or bottling will be carried out in the future by the new winery and by the existing , restructured Lideta and Asmara factories (Makanissa Winery will continue producing - with new equipment - only for 2-3 years).

As a consequence, when the whole consolidated project will be evaluated by the economic point of view (particularly through the calculation of the rate of return), it is necessary to take into account not only the proposed additional investments but also the investments made in the past for the creation of Lideta and Asmara wineries.

Table n° 15 - SUMMARY OF PROJECT INVESTMENT COSTS AND BREAKDOWN BY COSTS IN LOCAL MONEY AND COSTS IN FOREIGN CURRENCY

(in 000 Birr, at XI/1985 prices)

ITEMS	TOTAL (1)	IN LOCAL MONEY (2)	IN FOREIGN CURRENCY (2)	
			Amount	%
. AREAS SETTLEMENT AND OTHER CIVIL WORKS (3)	608.1	608.1	-	-
. BUILDINGS (New) (3)	4,696.5	4,696.5	-	-
. INTERVENTIONS ON EXISTING BUILDINGS (3)	633.5	633.5	-	-
. MACHINERY AND EQUIPMENT, INCL. GENERAL SERVICES	18,917.0	2,177.0	16,740.0	88.5
. REPAIR AND EXTRA MAINTENANCE OF EXISTING EQUIPMENT (3)	151.0	151.0	-	-
. VEHICLES (Internal and external) (5)	979.9	391.9	588.0	60.0
. SPARE PARTS (strategic stock) (4)	1,591.2	207.2	1,384.0	87.0
. FURNITURE AND NON-TECHNICAL EQUIPMENT	619.3	339.3	280.0	45.0
. COSTS FOR EQUIPMENT EXCHANGES BETWEEN WINERIES	270.0	270.0	-	-
1st TOTAL	28,466.5	9,474.5	18,992.0	66.7
. TECHNICAL ASSISTANCE (expatriate) (6)	294.0	-	294.0	100.0
. TRAINING OF ETHIOPIAN PERSONNEL	52.9	-	52.9	100.0
. PRELIMINARY AND OTHER ORGANIZATIONAL EXPENSES	140.0	-	140.0	100.0
TOTAL	28,953.4	9,474.5	19,478.9	67.3

(1) Final cost, including transport cost to Assab, insurance, custom and transit duties and costs, landing costs, warehousing costs, transport to factories area, assembling (suppliers personnel and local labour), equipment start-up where necessary; and contingencies (around 10% on final cost).

(2) By the financial point of view, costs in local money include all works and purchases paid in local money regardless from the origin (national or foreign) of the goods and services.

(3) It was assumed that all civil works will be allotted to local enterprises, eventually with the assistance of a project supervisor (local or expatriate). Therefore costs are considered in local money, taking also into account the previous note (2).

(4) This kind of stock is considered a fixed asset and not a working capital (see project manuals of UNIDO, OECD, etc.).

(5) Trucks and cars are here considered locally available (assembled with imported pieces).

(6) On the assumption that also local expenses (per diem) will be paid originally in foreign currency.

In this analysis the actual or residual value of the operating capital goods, mainly represented by the buildings and the equipment classified in good condition (see Annex n. 4), therefore fully operative until their replacement, will be estimated.

In this context all subsequent economic analyses (maintenance, depreciation, replacement, residual value) will concern also the existing capital goods.

Theoretically their "residual value" would be calculated on the basis of the respective initial (or purchase) costs and successive depreciation. Due to the complexity of this operation (investment carried out often since several decades in different monetary system and current value), the system of the actual, effective value of the existing goods has been selected, taking in due account the jointed estimates of IFAGRARIA Team, and E.B.C.

These are the results (in 000 Birr):

	Lideta	**Asmara**
- present value of the buildings	1,200	350
- present value of the equipment	600	250
	1,800	600
- actual value of all other investment costs	700	200
Total	**2,500**	**800**

That means a present "commercial" or "assignement" value of 2.5 million Birr for Lideta Winery and 0.8 million Birr for the Asmara factory, in total 3.3 million Birr.

Maintenance costs of buildings and equipment have been included in Annex 15, Tab. n. 1 ; replacement of the equipment, in the their new purchase value (1.2 million for Lideta, 0.45 million for Asmara) , subsequent depreciation and residual value in Annex 16, Tab. n. 1.

7.4 ANNUAL OPERATING COSTS

7.4.1 Methodological notes

The operating costs of the consolidated project have been calculated, year by year, until the year 2000, on the basis of wine sales programmed in order to meet yearly the total demand (domestic potential consumption and expected exports) projected in the short (1990), medium (1995) and long term (year 2000).

The methodology to estimate the operating costs only in the last year - at any rate not yet to be considered a stabilized or normalized year - applying, for the preceding years, economic-technical parameters, was rejected, even if accepted for a feasibility study.

As a matter of fact during the whole projection period some new cost elements, not directly connected to the production levels, cause variations in the total costs. This is the case of the newly scheduled investments (modular enlargements of the new winery, additional "musting" Centres), which increase maintenance and depreciation. Morever - as later on exposed - it was assumed, for several reasons, that the purchase unit price of the fresh grape will decrease in the period.

Total operating costs start in 1987 with 16.5 million Birr ; in 1990 they will reach 29.6 million Birr, before depreciation, and 31.9 million Birr, after depreciation (before interest and tax); in 1995 43.8 million Birr (46.2) and in the year 2000 51.3 million Birr (53.6).

The detail of the consolidated operating costs is shown in the Annex 13, Tab. 1 ; they are summarized in the following Tab. 16 .

In the following points some considerations are given on each cost element.

Tab. 16 - PROJECT CONSOLIDATED OPERATING COSTS - 1990,1995,2000

(in 000 Birr, at XI/1985 constant prices)

COST ELEMENTS	1990		1995		2000	
	Value	%	Value	%	Value	%
Raw and auxiliary material	10,301.7	32.3	15,357.0	33.3	17,491.3	32.6
. Fresh grape	4,654.0	14.6	7,584.3	16.4	8,100.0	15.1
. Dry raisin	2,227.9	7.0	3,057.7	6.6	3,693.4	6.9
. Sugar	2,568.6	8.0	3,525.4	7.7	4,258.3	7.9
. Chemicals (tartaric and citric acids, etc.)	851.2	2.7	1,189.6	2.6	1,439.6	2.7
Packaging material	11,721.7	36.7	17,997.9	39.0	22,043.4	41.1
. Bottles	5,531.9	17.3	8,989.7	19.5	11,081.7	20.7
. Other	6,189.8	19.4	9,008.2	19.5	10,961.7	20.4
Utilities, fuel and oil	653.2	2.0	942.9	2.0	1,144.5	2.1
. Energy	297.5	0.9	430.6	0.9	523.6	1.0
. Water	40.0	0.1	57.3	0.1	69.6	0.1
. Fuel and oil	315.7	1.0	455.0	1.0	551.3	1.0
Other consumption products	264.0	0.8	372.4	0.8	430.0	0.8
Personnel	782.3	2.5	1,096.5	2.4	1,244.5	2.3
Maintenance	921.9	2.9	962.3	2.1	987.7	1.8
Overheads	989.6	3.1	1,409.6	3.0	1,490.0	2.8
Sales and distribution expenses	2,631.0	8.2	3,598.0	7.8	4,300.0	8.0
Other costs and contingencies (5 - 6%)	1,377.8	4.3	2,035.4	4.4	2,401.8	4.5
TOTAL COSTS, before depreciation	**29,643.2**	**92.8**	**43,772.0**	**94.8**	**51,533.2**	**96.2**
Depreciation	2,300.9	7.2	2,401.8	5.2	2,044.6	3.8
TOTAL COSTS, before interest and tax	**31,944.1**	**100.0**	**46,173.8**	**100.0**	**53,577.8**	**100.0**
1987 (16,527.1) = 100	193.3	x	279.4	x	324.2	x

7.4.2 Raw material

7.4.2.1 Fresh grape

Yearly inputs of fresh grape are given in Tab. n. 12 ("Projection of grape output, wine production and export at short, medium and long term"). At the heading of the mentioned Annex 13,Tab. 1 , annual programmed wine production according the average-high assumption, with a break - down between wine from fresh grape and wine from dry raisin, is reported. These data will be, of course, the main base for the cost analysis.

Inputs of grape have been calculated according a net yield of 55 litres of wine per quintal of grape.

Fresh grape coming from the national vineyards was charged to the processing plants at the present unit purchase price of 1.30 B/kg. Starting from 1991 a price of 1.27 B/kg, progressively decreasing to 0.90 B/kg was considered in this study, in the reasonable assumption that,due to the planned restructuration and development of the vineyards(and of the whole wine sector), production costs - now too high - will decline rapidly.

7.4.2.2 Dry raisin

Yearly supply of dry raisin (imported), to be used only for the production of this kind of wine, was estimated according the techni - cal parameter of 6-7 kg per hl of dry raisin wine. Unit purchase price, free winery, is 2.55 B/kg, according recent information.

7.4.2.3 Sugar

Annual requirement of sugar, only for dry raisin wine, has been estimated on the basis of the technical parameter of 18 kg per hl of wine at the purchase price of 98 B/q. (Ethiopian Sugar Estates).

It was not foreseen the cost of concentrated must, only occasionaly used by Awash wineries.

7.4.2.4 Chemicals (additives)

Yearly supply of tartaric acid was estimated on the basis of the technical parameter of 700 gr per hl of dry raisin wine, at the purchase price of 4.75 B/kg; the supply of citric acid according 100 gr per hl at 5.30 B/kg (1).

The annual cost of other chemicals (bentonite, tannin, meta - sulphite, sulphuric anhydride, ascorbic acid, etc.) has been estimated on the basis of the technical-economic parameter of 1.75 B/hl total wine.

7.4.3 Packaging material

7.4.3.1 Bottles

Cost of bottles for vintage wine - mainly to be exported - is of course, totally incorporated to the sale price, therefore not recoverable. Bottles for dry raisin wine sold on the domestic market can be par-

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(1) It was not considered here a possible marginal use of these acids for grape wine, also because that depends on organolectical characteristics of the fresh grape, often different harvest by harvest.

tially recovered. In this study, it was assumed a duration cycle of 5 years per bottle, therefore with an yearly cost of 20% of the annual requirement.

It was applied a purchase price of 0.85 Birr per bottle of 0.750 l. presently current in Ethiopia. As known this cost represents 40--50% of the production cost of wines. No reduction of the unit price of bottles in the future has been foreseen in this study due to insufficient information about the up-dating or reorganization plans of the existing Ethiopian glass factory.

7.4.3.2 Other packaging material

For all other packaging material (corks for grape wine, capsules or crowns for dry raisin wine sold in the domestic market, labels, glue, etc.) present costs have been assumed, always estimated on the basis of wine sales in bottles.

Grape wine will be sold in cardboard boxes for 12 bottles, not recoverable (price 1.10 B/piece). Domestic sales will be carried with in plastic boxes or crates, each for 12 bottles, to be periodically recovered (average duration 5 years) at 7.00 B/piece (1).

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(1) Relative cost savings could be obtained in the case of domestic sales of wine carried out also using alternative containers such as 2-litres bottles or flasks and kegs for draught wine consumption or in bulk.

7.4.4 Utilities, fuel and oil

The annual cost for *energy* was estimated on the basis of the technical-economic parameter of 1.80 Birr per hl of wine produced, taking into account the national tariff rates for industrial uses.

The supply of *water* has been calculated on the basis of a consumption of 95 litres (potable) per hl of dry raisin wine; and of 400 litres per hl of wine (from dry raisin and grape) for processing requirement (1).

Cost of water was charged at 0.50 B/cu.m/month current in Addis Ababa.

Fuel and oil for all processes were charged according to the technical-economic parameter of 1.75 B/hl wine (total).

Fuel (gasoil, petrol) for internal (forklifts) and external transport (trucks, cars) has been calculated on the basis of an average daily consumption.

7.4.5 Other consumption products

All other consumption products (chemicals for laboratories ; cleaning, hygienic, health products; standard hand tools; special clothes etc.) have been charged in the measure of 0.8-1.0% of the total production cost.

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(1) It was assumed that this last kind of water will be supplied through local wells.

7.4.6 Personnel

The personnel required for the restructured wineries (Awash Lideta and Asmara factories) and for the new plant is shown in the following Tab. 17 , with the relative yearly cost in the projection period 1987-2000; and, in major detail (qualification, unit average salary, etc.) in Annex 14, Tab. 1, 2 and 3 (1990, 1995 and 2000).

Number of personnel has been yearly determined taking into account:

- the production level (wine production and bottling, in the case of the new winery and Asmara factory; only bottling activity in the case of Lideta Winery);
- the introduction of new equipment, in the case of the modular enlargements of the new winery;
- the technical and operational characteristics of the equipment, directly affecting the required number of labour (from full automatic to handly operations);
- the employment requirement for social reasons: as a result, a considerably higher number of labour was appointed, in comparaison with that normally employed in Italian or E.E.C. wineries;
- the effect of a more rational organization in the factories, especially in the new winery, due also to the planned personnel training and technical assistance.

Personnel for wine deliveries on the market was not included: these costs have been imputed to the item "Sales and distribution expenses".

It was assumed that in the first and second project year (1987 and 1988) Makanissa Winery will utilize the personnel existing at September 1985 (149 units); therefore the same annual cost was considered in the mentioned Table.

The annual cost of the personnel was estimated on the basis of the average salaries, per category, valid at September 1985 (during IFA - GRARIA mission) for the Awash Wineries, with some increase also with the purpose to include eventual indirect social costs charged to the firm.

Table n° 17- COST OF PERSONNEL, BY PLANT, IN THE PROJECTION PERIOD (1987-2000) (1)

(Costs in 000 Birr, at XI/1985 prices)

YEAR	MAKANISSA M. (2)		LIDETA M.		ASMARA F.		NEW PLANT		TOTAL	
	N.	Cost	N.	Cost	N.	Cost	N.	Cost	N.	Cost
1987	(149)	267.9	78	268.3	42	165.0	-	-	(269)	701.2
1988	(149)	267.9	78	268.3	43	167.0	(18) (3)	30.7	(288)	733.9
1989	-	-	80	279.4	45	173.3	82	297.0	207	749.4
1990	-	-	87	299.3	47	182.7	84	300.3	218	782.3
1991	-	-	94	313.0	52	200.5	98 (4)	343.2	244	856.7
1992	-	-	99	326.3	54	210.2	103	352.4	256	888.9
1993	-	-	104	338.5	58	218.9	109	363.6	271	921.0
1994	-	-	109	351.3	59	223.7	128 (5)	422.8	296	997.8
1995	-	-	127 (7)	407.6	63	236.9	139	452.0	329	1,096.5
1996	-	-	132	423.4	65	238.9	147	475.4	344	1,137.7
1997	-	-	132	423.4	68	244.2	154	495.2	354	1,162.8
1998	-	-	136	433.6	70	247.8	171 (6)	544.3	377	1,225.7
1999	-	-	136	433.6	73	255.9	176	555.0	385	1,244.5
2000	-	-	136	433.6	73	255.9	176	555.0	385	1,244.5

(1) Yearly cost includes: basic salary, fringe benefits and other indirect social charges, contingencies (≃ 10%). In this analysis contingencies refer only to total costs, but, in reality, cover also additional personnel. Number of personnel includes seasonal labour (2 months per year).

(2) Number of employees and annual salary (and fringe benefit) at September 1985, according information supplied by E.B.C.

(3) General manager, 6 months; other personnel 3 months (organizational works).

(4) Start of 2nd module.

(5) Start of 3rd module.

(6) Start of 3rd module.

(7) Start of 2-shifts activity only during peak period, as a subsidiary bottling unit of the New Plant.

According to the above principles, the new winery will start operation (1989) with 82 persons (managerial staff + services 20; direct and indirect labour 62) and will reach 176 persons in the year 2000 (33+ 143).

However in the pre-operational period (during and soon after equipment assembling), a first nucleous of responsable and qualified u - nits, assisted by trained personnel, will attend some preliminary works (General Manager for 6 months, other personnel for 3 months).

Lideta Winery will start only its bottling activity in 1987 with 78 persons (26 + 52); the employment will increase, especially af - ter 1995, when the plant is called to share, in greater measure, the bott- ling activity with the new plant. It was assumed that in the year 2000 the employment will reach 136 units (32 + 104).

Asmara Winery will start with 42 units (14 + 28) and would reach 73 units (21 + 52) in the year 2000, when wine production is expec- ted to be more then double, with the purpose to meet the growing domestic demand.

7.4.7 Maintenance

The annual costs fc. the maintenance of the project capital goods are detailed in Annex n. 15 . They have been estima- ted according technical parameters applied in similar industrial activi - ties, expressed by a percentage of the initial investment cost. Maintenan ce regards buildings, equipment including vehicles and non technologic e- quipment, like furniture. Maintenance costs are formed mainly by the use of spare parts and other materials and by the cost of external personnel called to assist the mechanicians of the workshop.

The mentioned table - like the other - is provided with ex - planatory foot notes.

It is worth observing that, for a better approach, maintenan- ce rates of the equipment exposed in the table roughly represent weighted

averages between different kinds of equipment having different maintenance requirement: so for engines and similar equipment costs are high (7 - 8% of their value); for steel fermentation and stocking vats costs are lower (around 1%)(1).

Maintenance costs start in the year subsequent to that in which the capital good has entered in operation or was replaced.

7.4.8 Overheads

The overheads directly related to the production costs have been, also estimated by means of a percentage on the total of these costs. The other overheads, representing general expenses (administration, excluding sales expenses), are growing in a first period remaining afterwards almost constant.

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(1) As a matter of fact maintenance requirement increase with the equipment "age" or wear, according characteristic mathematical functions, from the first year of operation until the replacement time. The proposed yearly parameters, for this kind of study, are constant and represent roughly an interpolation of the function.

7.4.9 Sales and distribution costs

They include marketing and promotional expenses, which are relatively higher in the first period during which sales of wine, especially of fresh grape wine to be exported, must be supported through a careful promotional campaign, also with the purpose to change favorably the previous "image" of the Ethiopian wine (see Market Study, Chapter 3).

Costs for wine distribution on the domestic market have been estimated on the assumption that the present system will be adopted. At any rate, should the E.B.C. management follow in the future different systems, suggested in the Market Study, the required expenses would be roughly at the same level.

7.4.10 Other costs and contingencies

In order to cover possible underevaluations of costs and expenses not specifically exposed, total costs has been augmented of around 5-6%.

7.4.11 Depreciation and amortization

The depreciation of the capital goods and the financial amortization of the remaining investment costs is calculated in detail in the Annex 16.

Annual depreciation was estimated on the basis of the average technical-economic life of each group of capital goods. The adopted scheme is the following:

	Years	%
- Buildings	50	2.0
- Equipment with short technical life	7	14.3
- Equipment with average technical life	10	10.0
- Equipment with long technical life (1)	20	5.0
- Vehicles	6 (2)	16.6
- Non-technologic equipment	10	10.0

The break-down of the equipment by lifetime classes was estimated on the basis of experience adquired in similar wineries in their operational phases.

(1) Mainly represented by stainless steel vats (for fermentation and storage).

(2) Weighted average life of forklifts and pallets (8 years) and cars and trucks (5 years).

Annual amortization of the remaining costs (other civil works technical assistance, training, preliminary expenses, etc.) has been conventionnaly carried out in 10 years (10%).

The residual value of the renewable capital goods (equipment, vehicles, non-technologic equipment) will be imputed, at the end of the projection period (year 2000), to additional receipts (therefore benefits).

As a result the annual instalments start with 1,232,000 Birr in 1988 and finish with 2,044,600 Birr in the year 2000.

7.4.12 Operating costs payable in local money and foreign currency

This break-down is shown in the Annex 17, Tab. n. 1 , for the year 1990, 1995 and 2000. As already remarked for the investment costs , only material imported, *at CIF stage*, has been considered a cost in foreign currency: dry raisin, chemicals, corks and some other packaging material, the major part of maintenance cost (use of imported spare parts) and part of some other costs.

As a result only around 11-12% of total operating costs (before depreciation) would be paid in foreign currency.

7.4.13 Production cost per wine unit

On the basis of the costs detailed in the Annex 18, Tab.n. 1, the production cost per unit of wine produced (1 litre) has been calculated, at short, medium and long term, as follows (Birr per litre):

Calculation base	1990	1985	2000
- Only production costs (1)	1.49	1.54	1.50
- Total operating costs, less depreciation, indivisible costs and contingencies	1.71	1.74	1.69
- Total operating costs, less depreciation	1.79	1.83	1.77
- Total operating costs, incl. deprecia - tion (before interest and tax)	1.93	1.93	1.84

7.5 THE REQUIRED WORKING CAPITAL

The working capital necessary for liquidity requirement in the initial operating years of the complex is here calculated as a difference between current assets or active and current liabilities or passive, that is as a net working capital.

This involves mainly new plant operation, and the temporary , but by far higher wine making activity of Makanissa Winery.

Therefore it was assumed that the working capital will be formed and managed by E.B.C.

The results are reported in the following Tab. n. 18.

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(1) Raw and auxiliary material, packaging material, utilities-fuel-oil, other consumption costs, maintenance, direct labour, production overheads.

Tab. 18 - CALCULATION OF THE WORKING CAPITAL

(in 000 B, at XI/1985 prices)

DESCRIPTION	1 1987	2 1988	3 1989	4 1990
CURRENT ACTIVE	4,370	5,380	6,744	8,242
a) Debtor accounts (credits to be received) (30 days production costs)	1,100	1,527	1,930	2,372
b) Stocks	3,138	3,653	4,541	5,553
- local raw material (30 days)	696	975	1,240	1,590
- imported raw material, incl. chemicals (100 days)	990	1,306	1,561	1,825
- works-in-progress (10 days production costs)	366	507	637	788
- spare parts (1)	-	-	-	-
- finished products (15 days production costs, plus administrative overheads and sales costs)	618	865	1,103	1,350
- additional stock of bottles and crates (+ 15 days)	468	-	-	-
c) Receipts (15 days production costs, less utilities)	132	200	273	317
CURRENT PASSIVE	-1,050	- 1,330	-1,660	- 2,255
Creditor accounts (debts to be paid) (30 days raw material costs, plus utilities)	-1,050	- 1,330	-1,660	- 2,255
NET WORKING CAPITAL	**3,320**	**4,050**	**5,084**	**5,987**
Yearly increases (2)	-	730	1,034	903

(1) An initial strategic stocks has been included in the investiment costs.

(2) Further increases are the following: 1991 = 870; 1992 = 742. It was assumed that in the following years temporary liquidity gaps will be easily covered with accumulated income.

7.6 THE SALES

Starting from second project year (1983) the sales of wine have been yearly programmed with the purpose to meet the domestic po - tential demand for wine consumption and expected exports, estimated ac cording to the average-high assumption exposed in the market study (Chapter 3, Tab. 10).

Sales concern separately wine from fresh grape - of course directly connected with the planned development at short, medium and long term of the national vineyard - and wine from dry raisin. It was assumed that vintage wine will be exported and the remai- ning sold in the local market.

For project analysis purposes, wine is supposed to be sold in bottles of 0.750 litres. Of course alternative containers (2 litres bottles, kegs for draught wine, etc.) will be possible, as well as sa- les in bulk.

The programmed development of wine sales, in the foreign and local market, by quality and related prices, is exposed in Annex 19, Tab. 1.

7.6.1 Exports

Wine from fresh grape was subdivided in two qualities ac- cording processes described in the Chapter 6: the first quality cor - responds to 60% of total, the second quality corresponds to the remai ning 40%.

After a proper market research on wine international trade (see Chapter 3), the Consultant suggests a price of 1.50 U.S. $ per li tre (about 3.10 B/litre or 2.32 B/bottle) for 1st quality wines and 1.00 U.S.$ (2.07 B/litre or 1.55 B/bottle) for 2nd quality wines, star ting from 1989, when the new winery will enter in production.

These prices - at the foreign distributor - can be retained competitive with the corresponding import prices of wines coming from the main European and African countries. It should be remembered that present unit prices of exported Ethiopian wines (not vintage) vary from 1.40 to 1.70 U.S. Dollar per litre.

It is probable that in the two first project years, exported wine will be produced also using certain quantities of dry raisin and therefore lower sale prices were assumed (1.20 and 0.80 U.S.$, respectively).

7.6.2 Domestic sales

Vintage wine not exported, mainly of 2nd quality, will be sold on the domestic market, generally consumed by high income classes. The proposed price is 6.00 B/litre (4.50 B/bottle), taking into account that the best wine, almost totally made with dry raisin, is at present sold at 5.000-6.00 B/bottle.

Sales of dry raisin wine are subdivided in 4 classes of qualities and prices, starting from the present situation (statistics ofsales by kind of wine) and assuming a progressive increase, in the project life, of the consumption of better quality wines and a parallel relative decrease of the consumption of the most common wine (Sarris), as a direct effect of the improvement of: wine qualities, promotional measures and consumers income.

According to this methodology - shown in Annex 20, Tab. 1 - first class wine has been quoted at 4.66 B/l (3.50 B/bottle), with sales increasing from 1%to 5%; 2nd class wine at 3.33 B/l (2.50 B/bottle), with increases from 5% to 10%; the 3rd class wine at 2.66 B/l (2.00 B/bottle), with increases from 9% to 15%; and the 4th class wine (Sarris or equivalent) at 1.73 B/l (1.30 B/bottle), with a decrease from 85% to 70%.

It should be underlined that the sale prices assumed in this study are, on the average, considerably lower than the corre

spondent present prices (1).

The economic results of wine sales are presented in detail in Annex 19 and summarized in the following Table n. 19 .

7.6.3 Other receipts (by-products)

According to the technologic processes followed by the new winery, the by-products, mainly represented by exhausted pomaces and "vinello" (wine with low alcoholic content and low quality, not utilizable as table wine), are transferred to the distilleries, for further elaborations (alcohol for liqueurs, grappa, cognac, etc.). On an average each quintal of fresh grape transformed in wine, 40% in weight is represented by pomace having a residual alcoholic content of around 2%. The yield is theoretically higher for dry raisin pomace, but that depends upon processing requirement and systems: in the existing wineries residual pomace, repeatedly treated and exhausted can hardly be explcited.

In Europe the commercial value of pomace with a minimum content of 2 alcoholic degrees represent 3 to 4% of the receipts from wine sales (2)

In this evaluation receipts from wineries by-products have been prudentially estimated at 1.5% of wine sales, also in view of a saturation of the domestic demand for other alcoholic beverages.

The results are included in the Annex 19, Tab. 1.

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(1) Wine demand econometric projections reported in the market study (Chapter 3) has been mainly estimated on the basis of population and income increase (income-elasticity). So the factors "quality" (improved) and "price" (lowered) could by far support the average-high demand hypothesis assumed and elaborated in the subsequent analysis.

(2) By-products are indeed exploited not only for alcohol derivates, but also for oil producing (from grape stones), feedstuff, etc.

Tab. 19- DEVELOPMENT OF WINE SALES: 1987 - 2000

(at XI/1985 constant prices)

YEAR	EXPORTS			DOMESTIC SALES			TOTAL		I.N. 1987 = 100 (receipts)
	Hl (1)	A.P.	Receipts (000 B)	Hl	A.P.	Receipts (000 B)	Hl	Receipts (000 B)	
1987	4,000	2.15	861.2	106,000	1.99	21,043.9	110,000	21,905,1	100.0
1988	6,300	2.15	1,356.3	127,100	2.02	25,661.8	133,400	27,018.1	123.3
1989	8,900	2.69	2,395.0	139,000	2.07	28,837.5	147,900	31,232.5	142.6
1990	13,500	2.69	3,632.9	151,800	2.14	32,434.1	165,300	36,067.0	164.6
1991	17,900	2.69	4,816.9	165,200	2.15	35,584.7	183,100	40,401.6	184.4
1992	20,500	2.69	5,516.6	177,700	2.20	39,161.8	198,200	44,678.4	204.0
1993	24,100	2.69	6,485.3	189,500	2.22	42,141.3	213,600	48,626.6	222.0
1994	26,800	2.69	7,211.8	200,000	2.26	45,188.3	226,800	52,400.1	239.2
1995	29,500	2.69	7,938.5	209,700	2.29	47,944.3	239,200	55,882.8	255.1
1996	31,900	2.69	8,584.3	218,500	2.30	50,264.7	250,400	58,849,0	268,7
1997	34,000	2.69	9,149.4	226,900	2.31	52,487.2	260,900	61,681.6	281,6
1998	36,200	2.69	9,741.5	235,200	2.32	54,612.9	271,400	64,354.4	293.8
1999	38,200	2.69	10,279.7	243,100	2.32	56,509.4	281,300	66,789,1	304.9
2000	40,000	2.69	10,764,0	250,900	2.32	58,324.7	290,900	69,088.7	315.4

NOTES: A.P. = Average unit price (B/Litre)

I.N. = Index Number

(1) See tab. 11 (chapter 3)

7.7 FINANCIAL RESULTS

7.7.1 General

The whole project, in its consolidated approach will be firstly evaluated from the financial point of view (financial profitability for the investor or the E.E.C.). Then its effects on the national economy will be briefly appraised.

The financial evaluation will be carried out through

a) the cost/benefit analysis;
b) the determination of the simple accounting rate of return;
c) the calculation of the internal rate of return;
d) the determination of the recoupment or pay-back period;
e) the sensitivity analysis.

7.7.2 Cost/benefit analysis (current commercial marge)

During the project life (1987-2000) the consolidated gross profit of the wineries (as the relationship between annual operating costs and receipts) varies from a minimum of 18.7% (1991) to a maximum of 26.5% (2000), before depreciation; and from 12.7% (1990) to 23.6% (2000), after depreciation.

These results (detailed in the following Tab. 20) must be considered favorable, taking into account that it was possible to reduce considerably the unit sale prices of wine in respect to the average prices presently current. In other words, should the present prices be applied in the project, the gross profit would be even higher.

Tab. 20 - FORECAST OF PROJECTS CONSOLIDATED COSTS, RECEIPTS AND PROFITS

(000 B, at XI/1985 prices)

YEAR	ANNUAL OPERATING COSTS			RECEIPTS (sales)	GROSS PROFIT			
	BEFORE DEPRECIATON	DEPRECIA-TION	TOTAL		BEFORE DEPRECIATION		AFTER DEPRECIATION	
					VALUE	%	VALUE	%
1987	16,527.1	-	16,527.1	22,233.7	5,706.6	25.7	5,706.6	25.7
1988	21,292.7	1,232.0	22,524.7	27,423.4	6,130.7	22.4	4,898.7	17.9
1989	25,190.4	2,300.9	27,491.3	31,701.0	6,510.6	20.5	4,209.7	13.3
1990	29,643.2	2,300.9	31,944.1	36,608.0	6,964.8	19.0	4,663.9	12.7
1991	33,333.7	2,300.9	35,634.6	41,007.6	7,673.9	18.7	5,373.0	13.1
1992	36,501.7	2,341.8	38,843.5	45,348.6	8,846.9	19.5	6,505.1	14.3
1993	39,311.8	2,341.8	41,653.6	49,356.0	10,044.2	20.4	7,702.4	15.6
1994	41,726.6	2,360.9	44,087.5	53,186.1	11,459.5	21.5	9,098.6	17.1
1995	43,772.0	2,401.8	46,173.8	56,721.0	12,949.0	22.8	10,547.2	18.6
1996	45,450.5	2,401.8	47,852.3	59,731.7	14,281.2	23.9	11,879.4	19.9
1997	47,074.7	2,420.8	49,495.5	62,606.8	15,532.1	24.8	13,111.3	20.9
1998	48,620.4	2,115.3	50,735.7	65,319.7	16,699.3	25.6	14,584.0	22.3
1999	50,122.7	2,044.6	52,167.3	67,790.9	17,668.2	26.1	15,623.6	23.0
2000	51,533.2	2,044.6	53,577.8	70,125.0	18,591.8	26.5	16,547.2	23.6

7.7.3 Accounting rate of return

The accounting rates of return, that is the relationships in percentage between the gross profit (before and after depreciation, and before interest and tax) and the total investment costs (fixed asset, plus working capital), have been calculated as follows (in %):

	1990	1995	2000
- $\frac{\text{gross profit, before depreciation}}{\text{Investment}}$ =	18,5	31,3	43,6
- $\frac{\text{gross profit, after depreciation}}{\text{Investment}}$ =	12,4	25,5	38,8

7.7.4 Internal rate of return

The internal rate of return (financial) of the consolidated project has turned out at 26.4%, as the result of the discounted cash flow (Tab. 21).

Annual sources (or income) are represented by the receipts (sales of wine and by-products); uses by the total of the following expenditure: estimated actual or residual value in the year 0 of all operative existing capital goods of Lideta and Asmara wineries (contributing to the project economic results), initial investment costs (fixed assets), periodical replacement of renewable capital goods, initial working capital and successive increases, instalments for the amortization of other investment costs (1) and annual operating costs (less depreciation).

(1) According a methodology based on the effective cash requirement.

Tab. 21 - INTERNAL RATE OF RETURN (FINANCIAL) OF THE CONSOLIDATED PROJECT

YEAR	INITIAL FIX ASSETS	REPLACEMENT OF RENEWABLE CAPITAL GOODS	WORKING CAPITAL AND INCREASE (net)	AMORTIZATION OF OTHER COSTS	ANNUAL OPERATING COSTS (less deprec.)	TOTAL COSTS	RECEIPTS (SALES)	BALANCE	ACTUALIZATION	
									At 25%	At 30%
0 - 1986	3,300.0(1)	-	-	-	-	3,300.0	-	- 3,300.0	- 3,300.0	- 3,300.0
1 - 1987	15,401.9	-	3,320.0	-	16,527.1	35,249.0	22,233.7	-13,015.3	-10,412.2	-10,011.8
2 - 1988	9,651.4	-	730.0	305.7	21,292.7	31,979.8	27,423.4	- 4,556.4	- 2,916.1	- 2,696.1
3 - 1989	842.9	-	1,034.0	436.2	25,190.4	27,503.5	31,701.0	4,197.5	2,149.1	1,910.6
4 - 1990	-	-	903.0	436.2	29,643.2	30,982.4	36,608.0	5,625.6	2,304.2	1,969.7
5 - 1991	817.2	-	870.0	436.2	33,333.7	35,457.1	41,007.6	5,550.5	1,818.8	1,494.9
6 - 1992	-	1,650.0 (2)	742.0	436.2	36,501.7	39,329.9	45,348.6	6,018.7	1,577.7	1,247.0
7 - 1993	201.8	437.5	... (3)	436.2	39,311.8	40,387.3	49,356.0	8,968.7	1,880.9	1,429.3
8 - 1994	817.2	3,944.7	...	436.2	41,726.6	46,924.7	53,186.1	6,261.4	1,050.5	767.6
9 - 1995	-	2,450.9	...	436.2	43,772.0	46,659.1	56,721.0	10,061.9	1,350.5	948.8
10 - 1996	201.9	-	...	436.2	45,450.5	46,088.6	59,731.7	13,643.1	1,464.9	989.7
11 - 1997	-	2,866.7	...	436.2	47,074.7	50,377.6	62,606.8	12,229.2	1,050.5	682.4
12 - 1998	1,019.1	2,554.0	...	130.7	48,620.4	52,324.2	65,319.7	12,995.5	893.1	557.8
13 - 1999	-	437.5	....	-	50,122.7	50,560.2	67,790.9	17,230.7	947.3	569.0
14 - 2000	-	524.4	...	-	51,533.2	52,075.6	70,125.0	18,049.4	793.8	458.5
Residual value of the renewable capital goods							**9,883.2**	**9,883.2**	**434.7**	**251.0**
Σ	32,253.4	14,883.7	7,599.0	-	530,100.7	x	x	**Total**	**+ 1,087.7**	**- 2,731.6**

(1) Estimated actual or residual value of all operative existing capital goods of Lideta and Asmara Wineries, which will continue contributing to the project economic results.

(2) Replacement of existing renewable capital goods (equipment of Lideta and Asmara Wineries) at current value.

(3) It is assumed that in the following years the seasonal liquidity gaps will be covered with the accumulated net income

$$\left.\begin{array}{l}\\\\\end{array}\right\} \text{I.R.T.} = 25 + 5 \left(\frac{1,087.7}{3,819.3}\right) = 26,424$$

$$= 26.4\%$$

NOTE: Taking into account only the purposed new investments (viz excluding the residual value of the existing capital goods of Lideta and Asmara Wineries: 3.3 million B), I.R.T. would be 30.2%.

The actualization has been carried on the balance between sources and uses.

Should the residual value of the existing capital be not added to the new proposed investments, the rate of return would be 30.2%.

7.7.5 The recoupment period

The pay-back period criterium - often used by investors and planners - applied to the present project has been calculated at only 3.2 years, viz the time required to recover the initial investment.

This result is the relationship of total initial investment costs (including working capital) and the arithmetical average of the annual gross profit (before depreciation) during the project life (14 years), viz 36,552.4/11,361.3(in 000 B.) (1)

(1) Including in the investment costs the residual value of the existing operative capital goods (Lideta and Asmara Wineries) the recoupment period would be 3.5 years. However this residual value does not represent, as a matter of fact, a real disbursement for the investor.

7.7.6 The sensitivity analysis

The economic results of the project, expressed with the above mentioned evaluation methods, can be altered, in more or less measure,by many kinds of errors, such as subestimations of single cost elements (supplies of raw and packaging material, labour, etc.) or/and overevaluation of income (wine sales level and unit prices).

The sensitivity analysis has been carried out, in this study, on the cost/profit results, represented by the gross profit levels projected in the basic period (1987-2000), by a progressive increase of the total costs and/or a progressive decrease of the income (receipts)

It was remarked, for example, that a linear increase of 10% of the costs - assuming unvaried the income levels - would allow to have still positive profits. Similar results would be reach should the income be lowered in the same measure, assuming unvaried the costs levels.

The break-even point, calculated, in the simplest form, regardless a break-down between fixed and variable costs, would be obtained:

- by a decrease of receipts from 12.7% (1990) to 23.6% (2000);
- by an increase of costs from 14.6% to 30.1%, respectively.

All the above assumptions show that the favourable economic results of the project are satisfactorily protected by evaluation errors (see Annex 21, Tab. 1).

7.8 ECONOMIC ANALYSIS FOR EACH PLANT

7.8.1 General

The general outlines of the project have been based on a particular model of strict operative and administrative interrelations between the three plants (Awash Lideta Winery, Asmara Factory and New Winery) and, in the first two-three project years, the inclusion of Makanissa Winery.

This mode of organization - was carefully discussed in Addis Ababa - and was in line with the expectations of E.B.C. manage - rial staff. The Ifagraria experts, and particularly the Economist, understood that, since the plants (and especially Lideta Winery and the newly planned unit) were not to be operated as independent entities , separate economic and financial analyses would lead to neither practical results nor to significant parameters, not being referred to an actual technico-economic reality.

Consequently the project was analysed as a consolidated unit because E.B.C. would remain the sole organizative commercial and administrative manager of all Ethiopian Wineries and that the project would be financed on its consolidated results and not plant by plant.

However, with the purpose to check the economic validity of each plant, should they be considered and made independent after pro - per restructuration, the more significant parameters used for this kind of economic appraisal have been re-calculated.

This additional analysis is a result of a series of variable factors which have been elaborated.

7.8.2 The feature of the plants once assumed independent

The change factors assumed for the redesign of each plant as independent units are as follows.

Lideta Winery

According to the project general scheme, the plant will become a subsidiary unit bottling wine produced in the New Plant, when operative (3rd project year). In the previous years this winery will bottle the wine produced in the same factory (35,000 hl) and by Makanissa Winery, after temporary rehabilitation (192,000 hl, in the first and second project year). According to the consolidated approach, wine transferred to Lideta (from Makanissa and then from the New Plant) is not paid for and bottled wine will be sold - together with that produced and bottled by the New Winery, through the E.B.C.'s commercial department.
Should Lideta Winery be considered an independent bottling unit, the whole economic analysis will be the following:

- wine would be purchased from the Makanissa Winery and the New Plant at bulk wine prices;
- bottled wine would be sold on the domestic and foreign market using own transport and own trade organization;
- consequently the cost/benefit analysis would take into consideration different values of cost items: supplies (wine,packaging material) personnel, consumption, utilities, overheads, distribution costs, etc.).

New Winery

As an independent plant, it will produce, bottle and sell wine to Lideta Winery (in bulk) and to the market within the limits represented by the overall progressive capacity of its containers and bottling plant, causing changes in the bottling and sales programmes and therefore in the cost/benefit analysis.

Makanissa Winery

It will produce wine for the first two-three years (before start up of the New Plant), thanks to its temporary rehabilitation, with new equipment then almost all destined to the New Plant.

During this time, investment and annual operating costs and sales will be disgregarded, viz not redistributed to the two other plants.

Ketema Winery

It will cease activity before project start up. Even if no additional cost for its temporary rehabilitation or relocation was planned, the plant would follow producing, bottling and selling wine in the pre-project years (1985, 1986), utilizing existing equipment and personnel.

Asmara Wine Factory

A separate economic analysis, by means of parameters, was carried out by introducing some variations concerning possible exchanges of equipment between the plant and the Addis Ababa wineries. Other changes regard the increase of the investment due to the redistribution of common cost (see 7.8.3).

Musting Centres

The investment and operating costs of the planned four Centres will be entirely costed to the New Plant.

Common costs

(a) Technical Assistance, Training, Preliminary expenses (investment) will be distributed in the three units (Lideta Winery, Asmara Winery, New Winery) according to different criteria, so as investment and/or sales levels;

(b) Cost for the exchange of equipment between the plants (investment) will be also distributed, but mainly imputed to the New Plant;

(c) General overheads and sales costs (operating) will be also distributed. It should be underlinedthat the summatory of these costs will be higher than the overall cost estimated in the consolidated analysis, in which "scale economies" have been assumed.

For the same reasons many other annual operating costs (supply of raw and auxiliary material, packaging material, fuel and oil, other consumption products, etc.) will be higher when separately imputed, since in the consolidated project all supplies, services and facilities were assumed to be carried out in a centralized system.

7.8.3 Redistribution of the investment

The redistribution and changes, by plant, of the invest - ment are summarized in the Tab. n. 22. The details for each plant of the investment costs,year by year,an given in Tables 23, 24 and 25.

According to this new approach, the overall investment of the three plants, assumed independent, would be 28,245,000 Birr, in - stead of 28,953,000 Birr estimated in the consolidated formula.

The difference (708,000 Birr) is caused by the elimination of the investment (after transfer of almost all new equipment to the New Plant) for the temporary rehabilitation of Makanissa Winery (895,000 Birr) and by an additional investment in vehicles (167,000 Birr) and related spare parts (20,000 Birr), due to the disavantage of separate sales.

7.8.4 Changes in the operating costs and sales

Annual operating costs have been recalculated, plant by plant, on the basis on the assumption of wine sales carried out separa tely by Lideta Winery and New Plant, as follows:

YEAR	WINE AVAILABILITY (hl)	PRODUCER	BOTTLING AND SALES (hl)	
			Lideta Winery (1)	New Plant (2)
1987 (3)	35,000 68,000	Lideta Winery Makanissa Winery	103,000 (4)	-
1988	124,000	Makanissa Winery	124,000 (4)	-
1989	138,000	New Plant	60,000	78,000
1990	155,000	ds.	60,000	95,000
1995	227,000	ds.	80,000 (4)	147,000
2000	277,000	ds.	90,000 (4)	187,000 (4)

(1) On the basis of a bottling capacity of 40 hl/h,starting from 1988, and of the ove rall capacity of the containers.

(2) On the basis of a bottling capacity of 80 hl/h, starting from 1989,and of the pro gressive overall capacity of the containers.

(3) Scheduled Project first year.

(4) In more than one shift, according to actual situations.

Tab.22 - REDISTRIBUTION AND CHANGES, BY PLANT, OF THE INVESTMENT

(000 B, at XI/1985 prices)

INVESTMENT	NEW WINERY		LIDETA WINERY		ASMARA WINERY		MAKANISSA WINERY (CONS.)	COMMON COSTS (CONS.)	TOTAL	
	Cons.	Ind.	Cons.	Ind.	Cons.	Ind.			Cons.	Ind.
. CIVIL WORKS	5,224	5,224	361	361	220	220	133	-	5,938	5,805
. EQUIPMENT	10,404	10,404	1,993	1,993	2,670	2,670	637	-	15,704	15,067
. VEHICLES	542	600	219	328	219	219	-	-	980	1,147
. SPARE PARTS	990	996	222	235	276	276	57	-	1,545	1,507
. FORNITURE	364	364	176	176	65	65	15	-	619	605
. SUCCESSIVE MODULES	2,452	2,452	-	-	-	-	-	-	2,452	2,452
. MUSTING CENTRES	-	807	-	-	-	-	-	807	807	807
. COST FOR EQUIPMENT XCHANGE	-	230	-	20	-	20	-	270	270	270
. TECHNICAL ASSISTANCE	-	206	-	48	-	40	-	294	294	294
. TRAINING	-	40	-	6	-	7	-	53	53	53
. PRELIMINARY	-	100	-	18	-	22	-	140	140	140
. REPAIR, MAINTENANCE	-	-	62	62	36	36	53	-	151	98
TOTAL	**19,976**	**21,423**	**3,033**	**3,247**	**3,486**	**3,575**	**895**	**1,564**	**28,953**	**28,245**

Tab. 23 - NEW PLANT: INVESTMENT BY YEAR

(000 Birr)

INVESTMENTS	1987	1988	1989	1991	1993	1994	1996	1998	TOTAL
. Area settlement	527	-	-	-	-	-	-	-	527
. Buildings	2,918	1,879	-	-	-	-	-	-	4,797
. Machines & Equipment	1,856	4,826	743	-	-	-	-	-	7,425
.. from Makanissa	2,680	300	-	-	-	-	-	-	2,980
.. enlargements	-	-	-	817	-	317	-	817	2,451
.. for musting Centres	-	191	-	-	190	-	191	190	762
. Vehicles	-	640	-	-	-	-	-	-	640
. Spare parts	450	609	70	-	11	-	12	11	1,163
.. New Plant	(450)	(520)	(70)	-	-	-	-	-	(1,040)
.. Centres	-	(12)	-	-	(11)	-	(12)	(11)	(46)
.. Vehicles (12%)	-	(77)	-	-	-	-	-	-	(77)
. [illegible]iture, etc.	-	364	-	-	-	-	-	-	364
. [illegible]ical Assistance	-	120	70	-	-	-	-	-	190
. Training	-	34	-	-	-	-	-	-	34
. Preliminary	90	-	-	-	-	-	-	-	90
. Equipment exchanges	-	200	-	-	-	-	-	-	200
TOTAL	8,521	9,163	883	817	201	817	203	1,018	21,623

Tab. 24 -LIDETA: INVESTMENT, BY YEAR

(000 Birr)

INVESTMENTS	1987	1988	1989	TOTAL
. Area settlement	38	-	-	38
. Internal buildings	323	-	-	323
. Equipment	1,813	180	-	1,993
. Repair	62	-	-	62
. Vehicles	320	-	-	320
. Spare parts	234	-	-	234
. Furniture	176	-	-	176
. Technical Assistance	-	40	20	60
. Training	-	11	-	11
. Equipment exchanges	-	40	-	40
. Preliminary	30	-	-	30
TOTAL	**2,996**	**271**	**20**	**3,287**
Present value of existing capital goods 2,500 (1)				2,500
TOTAL 2,500	**2,996**	**271**	**20**	**5.787**

(1) See Point 7.3 year "0" in the calculation of I.R.R.

Tab. 25 - ASMARA: INVESTMENT BY YEAR

(000 Birr)

INVESTMENT		1987	1988	1989	TOTAL
. Area settlement		23	-	-	23
. Internal buildings		197	-	-	97
. Equipment		2,430	240	-	,670
. Repair		36	-	-	36
. Vehicles		219	-	-	219
. Spare parts		276	-	-	276
. Furniture		65	-	-	65
. Technical Assistance		-	30	14	44
. Training		-	8	-	8
. Equipment exchanges		-	30	-	30
. Preliminary		20	-	-	20
TOTAL		**3,266**	**308**	**14**	**3,588**
Present estimated value of the existing capital goods (1)	800	-	-	-	800
TOTAL	**800**	**3,266**	**308**	**14**	**4,388**

(1) See Point 7.3 year "0", in the calculation of I.R.R.

The main changes for this re-distribution concern:

. the packaging material:
  (a) the New Plant would sell wine to Lideta Winery in bulk, therefore with no use of bottles, corks, capsules, labels and boxes but utilizing autotanks. Consequently sale price will be far lower. For this purpose an average price of 1,10 B/l was estimated (production cost: 0.85 B/l, after depreciation); for wine directly marketed, in bottle, production costs and sale prices are the same as given in the report.
  (b) Lideta Winery would sell bottled wine on the domestic and foreign market. Therefore there will be a "transfer" of costs for packaging from the New Plant and Lideta Winery.

. fuel for transport, costs for sales and distribution: re-calculated, taking into account higher costs due to separate, and not centralized, marketing system for both plants.

As concerns Asmara Winery, the cost/benefit analysis and the rate of return were estimated on the basis of the present semi-independent position of the plant, which will operate on Eritrean market, although managed by E.B.C.

Il should be noted that transitory costs and sales of Makanissa Winery will not of course be considered.

7.8.5 The final economic results

The realaboration of all basic data and variable factors concurring to the determination of the most relevant economic parameters referred to each plant, have given the results, later on exposed.

The fact of only a little lower investment, mainly due to the substraction of Makanissa costs for its temporary rehabilitation, has not caused substantial changes on the final, single results.

On the side of operating costs and sales - therefore from the point of view of the cost/benefit relation - the separate analyses have given less favourable or temporary negative economic results.

Indeed, the consolidated and interrelated scheme has the advantage to profit of all synergies stemming from an almost vertical integration of the whole Ethiopian wine activities, with scale econo - mies especially on the common, centralized services and facilities : supplies of raw and auxiliary material, sales (particularly on the fo- reign markets), central management, etc. And it is for these reasons that the project in its consolidated form, was studied and selected.

It should be clearly understood that a vertical integra - tion - or at least a stricter collaboration - between grape production (H.D.C.) and wine industry (E.B.C.) could further improve the economic results.

New Winery

In 1990 the gross profit, or commercial marge related to total re - ceipts, would be 13.8% before depreciation and 8.9% after depreciation; in 1995 the parameters would become 17.4% and 14.1%, respectively in the year 2000 19.0% and 16.4%.
The accounting rate of return (average gross profit during the period 1989-2000 divided for total investment, including working capital) would be 30.6% and 25.9%, respectively before and after depreciation.
The internal rate of return has been calculated at 21%.

Lideta Winery

In the period 1987-1989 the economic parameters, referred to an assu - med independent unit, would be negative or slighty higher than the equilibrium or break-even print. In the following period the commer - cial marge would raise to about 10% and 7%, respectively before and after depreciation.
The internal rate of return was estimated to be only 5%.

Asmara

Similar results have been estimated for this plant: in the year 2000 a commercial marge of 9% and 8%, before and after depreciation, respecti vely.
The internal rate of return was estimated to be 7%.

Due to the above mentioned lower economic results, higher costs will lead to higher sale prices, in order to obtain reasonable profits.

However Lideta Winery would be obliged to sell wine at unit prices not higher than prices applied by the New Plant, of course for the same kind of wine.

Only Asmara Winery could sell at higher prices, since the plant operates in a isolated market, in Eritrea, practically without commercial relations with the Addis Ababa wineries.

In conclusion the economic result of each plant as independent entities would be lower, especially for Lideta Winery, as a bottling unit (with exception in the first year project), detached from the New Winery, in which it produces wine.

7.9 ASSUMED PROJECT FINANCING SCHEDULE

The project financing will be, of course, discussed in due time.

With the main purpose to check whether the project can be financed with its internal sources (the receipts), the following scheme has been assumed:

Basic data (rounded figures)	**000 B.**	**000 US $**	
. Financiable investment	36,550	17,660	
.. initial investment	28,950	13,990	
.. working capital (1)	7,600	3,670	
. Investment cost in foreign currency (19,479 + 761)	20,240	9,780	= 55%
. Investment cost in local money (9,474 + 6,839)	16,310	7,880	= 45%
Assumed financing scheme			
. Soft loan of external sources (bilateral governmental agreements) nearly covering equipment (and spare parts), technical assistance and training	(18,460)	8,920	= 50%
. Loan of International Organization (World Bank, etc.)	(8,610)	4,160	= 24%
. Ethiopian Government (investment in local money)	9,480	(4,580)	= 26%

(1) As a contribution on the operating costs during initial years.

Loan conditions

- Soft loan
  - .. interest 3.5%
  - .. cover period: 10 years (1989-1998)
  - .. grace: 2 years, during construction, with interest, to be capitalized
- International loan
  - .. interest: 8.5%
  - .. remaining conditions: the same
- Ethiopian contribution has been considered "own funds" (statal partecipation on E.B.C. wineries) therefore free of interest

The introduction of the debt service in the project cash-flow would cause a decrease of the rate of return from 26.4% to 17.2%, a level to be considered quite satisfactory(1).

Annual gross profit after loans interests (before or after depreciation) would of course decrease only of some points, without at any rate affecting in appreciable measure the good results obtained in the operation (2).

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(1) According to above mentioned financial schedule total accumulated interest generated by the loans (27.07 million Birr) would amount to 9.63 million Birr); annual repayment instalments to 3.67 million Birr for an accumulated total of 36.7 million Birr.

(2) The distribution by year of the interests depends upon the methodology selected or required for debt amortization (constant or progressive instalments).

7.10 ECONOMIC RESULTS: EFFECTS OF THE PROJECT ON THE NATIONAL ECONOMY

7.10.1 General

In its implementation stage and during its life, the project cause direct effects, quantifiable in more and less measure:

a) On the balance of payment;
b) on the national budget;

and indirect general effects, not quantifiable (or hardly valuable) on the national economy.

7.10.2 Effects on the balance of payment

It was estimated that, during the first project 14 years(1987 2000), the total outflow of foreign currency, represented by the initial investment costs, the periodic replacement of renewable capital goods and the accumulated annual operating costs would reach about 90.1 million Birr, covered by an accumulated inflow of 88.8 million Birr, represen - ted by wine export in the period (an average of 6.34 million Birr yearly).

The deficit would be of only 1.3 - 1.4 million Birr, being 98.5% the relationship between inflows and outflows(see following Tab.26)

In this connection two important remarks must be made. Firs - tly, the above analysis is based on the real or cash exchange outflow and inflow, viz by the financial point of view. Taking into account the "eco nomic" value of goods and services (for investment and annual operation) paid in local money, but totally or partially of foreign origin, the sha- re of foreign exchanges would rise, according a rough estimate, to about 93 million Birr, therefore with a deficit of 4.2 million Birr, at any ra- te, not much far from that previously estimated.

In the second place, the above results refer to the starting project period during which all initial investment are carried out. In the time in which only the renewable goods will be replaced, exchange ba- lance appears clearly positive, especially should the new winery use a growing quantity of fresh grape instead of imported dry raisin.

Tab.n.26 - ESTIMATED OUTFLOW AND INFLOW OF FOREIGN CURRENCY IN THE PROJECT LIFE (1987-2000)

(in 000 Birr, at XI/1985 prices)

DESCRIPTION	TOTAL VALUE	ESTIMATED SHARE IN FOREIGN CURRENCY	%
OUTFLOW	**573,937**	**90,130**	**15.7**
. Initial investment costs (Tab. 15)	28,953	19,480	67.3
. Replacement of renewable capital goods (Tab. 1 , Annex 16)	14,884	12,350	83.0
.. Equipment	(12,320)	(10,902)	(88.5)
.. Vehicles	(1,960)	(1,176)	(60.0)
.. Non technologic equipment	(604)	(272)	(45.0)
. Operating costs (Tab. 16 and 1 of Annex n. 17) Σ	530,100	58,300	av.11.0
INFLOW			
. Export of wine (Tab. 1 , Annex 19)	**88,780**	**88,730**	**100.0**
BALANCE (1987-2000)	**x**	**-1,350**	**x**

7.10.3 Effects on the national Budget

In order to know-and possibly to quantify - the direct effects of the consolidated project on the national Budget, both the "financial " values of investment and of operating costs have been converted in "economic" values, the latter representing the net real cost of the project for the national economy.

Therefore all "transfers" to the national Budget have been subtracted from the financial costs. They are represented by all duties and taxes emerging in the route leading to the final acquisition of the goods and services involved in the project: custom duties and taxes on imports and all other internal taxation (income tax; turn-over, transaction, sales, excise tax, etc.).

This kind of analysis, would require, of course, the full knowledge of the national taxation system and a breakdown of each item (investment, annual expenditure) by cost elements through the "chain of price" (C.I.F. or supplier price, transport, labour, fuel; cost in local money and foreign currency; etc.).

Data reported later on are the result of local information and technic-economic parameters characteristic in similar projects and/or suggested by International Organizations. They must be, therefore, retained approximative, but sufficient for the present feasibility study purpose. Vice versa no additional burden for the national budget was assumed as an effect of governmental subsidies granted to project operation.

7.10.3.1 Economic value of the investment

The economic value of the initial investment was estimated at 25.8 million Birr, 89.3% of the correspondent financial cost (almost 29 million Birr). The conversion parameters for each item or group of item vary from a minimum of 76% (vehicles) to a maximum of 100% (training).The results are shown in Annex 22, Tab. 1.

Including the periodic replacement of the renewable capital goods, the total economic value of the investment in the whole period 1987

-2000 would be 39.3 million Birr, 89.7% of the financial cost (43.8 mil - lion).

The difference of 4.5 million Birr can be considered a transfer to the national Budget (1).

7.10.3.2 Economic value of the operating costs

The summatory of the operating costs in the project life is 530.1 million Birr, of which 58.3 million to be considered an expenditure in foreign currency (see Annex 17).

The correspondent economic value, obtained by deducting all the transfers considered in the previous point 7.8.3.1, was roughly estimated at 454 million Birr.

Also with this purpose each cost item has been separately analyzed, taking also into account the break-down of these costs payable in local money and in foreign currency.

The conversion parameter (85.7%) was obtained through the weighted average of the parameters referring to the single cost item: from a minimum of 54% for the imported dry raisin (due to high custom charges) to a maximum of 97% for the fresh grape, being assumed, in this study, that no real economic transaction will occur between the saler (Horticulture Development Corporation) and the users (H.B.C. wineries).

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(1) As regards the economic analysis of labour cost, see the following point.

Particular treatment was devoted to salaries. Transfers are, of course, represented by the amount of social charges and income tax. But the methodology to give an "opportunity" cost of zero for the unskilled labour has also been followed (1).

7.10.3.3 Final results

The total amount of the financial transfers to the National Budget during the project life (2) has been roughly estimated at 80.3 million Birr, out of which 4.5 million referred to investment (initial, replacement) and 75.8 million referred to operating costs.

The yearly average is around 5.74 million Birr. In the following years this level will be very likely influenced by a lower transfer flowing from operating costs.

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(1) The same procedure was followed for labour as a cost component of many investment items, particularly in the civil works.

(2) As a matter of fact, in this project a "normal"year - after which all economic data would remain unvaried - was not conceived, since a further increase of wineries activity was properly assumed.

7.10.4 Other direct and indirect effects of the project on the national economy

Due to the relative weight of this kind of project on the whole country socio-economic framework, also its direct and indirect effects not quantitatively expressed, are expected to be limited in proportion, but, at any way, involving many sectors of activity.

For example, the steady increase of the wine production will not fail to stimulate new initiatives (or to develop the existing ones) in the field of material and input supply: bottles, cardboards, crates, cork and other packaging material, construction material, equipment implement, workshops and other industrial and commercial facilities (including transportation), with possible import substitution, increase of value added in the interconnected sector of agriculture, industry, commerce and other services, as a contribution to the country's G.D.P.

Since its implementation and development, the project will contribute to raise the labour training, also through the foreseen program of technical assistance.

Due to the proposed new restructuration of the wine sector (two wineries will cease producing) based on higher technologies, employment will not increase in number, but labour quality will certainly raise, also thanks to the planned training and technical assistance program (1).

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(1) On the other side there will be an increase of labour in the agricultural sector (planned development of Ethiopian vineyards) and in all other sectors (secondary and tertiary) as a consequence of the mentioned new initiatives.

8. CONCLUSIONS AND RECOMMENDATIONS

The different kinds of evaluations presented in the previous Chapter have widely proved that the project, in its consolidated form, is feasible both by the financial and economic point of view.

The project was conceived taking into account the contractual requirements, in the framework of the national economic policy targets, and in particular, those of the 10-Year Perspective Plan.

In the medium-long term there will a considerable increase in foreign exchange earnings, as a result of a surplus from wine exports against the outflows representing the purchase of equipment and other imports.

A further development of the latter depends exclusively upon a parallel development of grape production in the country and the favourable reaction of the foreign markets, always respecting the condition that exported wine must be made only from fresh grape and marketed at competitive prices.

With the purpose to support wine exports, as far as national grape production will be in condition to grant the required supply, an effective promotional campaign must be carried out, also at governmental level, since the first years of project operation, also with the aim to decisively improve the image abroad of the Ethiopian wine.

In this connection the suggestions presented in the Chapter 3 (Market Study) have to be reminded.

Price policy for wine export must constantly adapt itself to changing international market, in one word to respect, in each purchaser country, the "import parity price" principle.

A policy based on elastic prices is recommended for sales in the domestic market through a constant analysis on wine and other beverages consumptions (changes of taste, development of sales by kind of wine or kind of income class, etc.).

The Ethiopian present regime of wine quasi-monopoly (production and sales) will facilitate this kind of price policy, both in the foreign and domestic market.

The Consultant suggests a constant proper use of all equip - ment: this task is facilitated also by the technologies, selected in view of local conditions, particularly as regards labour skilfulness adaptability and employment requirement, and by the planned training and techni - cal assistance program.

Too advanced or too automatized processes - current in the industrialized countries - have been avoided. Moreover much of the equipment is based on endurance (high use of stainless steel) and easy maintenan - ce.

The project success must be supported by external factors , mainly represented by technical and social infrastructure, among which it is worth reminding an improvement of all facilities connected with the wine processing and sales: means of transport, roads, communication, energy and water supply, special credit and investment occasions (especially for the vineyards development) and, in general, easier and timely services in the framework, of course, of the national economic policy.

A particular recommendation is devoted to all requirements connected with the import and transport operations of equipment and other supplies through Assab, bearing in mind that all delays in delivering them to wineries would cause increases of the final production cost of wine.

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ANNEXES

ANNEX 1

GROSS DOMESTIC PRODUCT

Tab. 1 - GROSS DOMESTIC PRODUCT BY ECONOMIC SECTOR AT CURRENT FACTOR COST (1976/77-1983/84)

(million Birr)

ITEMS	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84 (1)	DISTRIB. % 1983/84
Agriculture sector	**3,192.5**	**3,467.4**	**3,656.4**	**3,871.9**	**4,071.5**	**4,061.8**	**4,388.7**	**4,497.9**	**47.8**
- Agriculture	3,068.7	3,330.9	3,514.6	3,723.6	3,878.9	3,857.8	4,166.6	4,268.3	45.3
- Forestry	118.9	131.7	136.7	143.3	189.2	200.4	217.5	223.9	2.4
- Hunting and fishing	4.9	4.9	4.9	4.9	3.4	3.6	4.6	5.7	0.1
Other commodity sector	**899.2**	**894.2**	**1,046.4**	**1,189.4**	**1,258.3**	**1,296.6**	**1,401.9**	**1,473.3**	**15.7**
- Mining and quarrying	11.0	7.8	7.8	8.1	8.1	9.6	9.7	13.0	0.1
- Manufacturing	326.3	360.8	471.9	533.5	564.5	584.1	655.9	670.1	7.2
- Handcraft and small industry	274.1	275.3	286.4	196.5	306.9	311.8	328.3	339.1	3.6
- Building and constructions	238.7	211.0	229.4	295.9	320.8	324.8	346.0	385.7	4.1
- Electricity and water	39.1	39.3	50.9	55.4	58.0	56.3	62.0	65.4	0.7
Services	**2,064.6**	**2,125.8**	**2,383.7**	**2,563.4**	**2,770.5**	**2,940.4**	**3,277.2**	**3,441.8**	**36.5**
- Whole sale and retail trade	579.0	591.8	743.4	812.2	853.4	893.4	980.4	1,036.2	11.0
- Transport and communication	299.1	298.2	332.3	355.1	368.5	446.1	523.8	542.1	5.8
- Banking, insurance and real estate	146.5	162.9	202.3	244.5	291.7	278.1	326.5	294.9	3.1
- Public administration incl. Defense	431.2	482.2	487.1	510.2	584.5	617.4	694.4	751.2	8.0
- Ownership of dwelling	193.1	193.4	196.3	200.2	206.3	212.0	217.9	223.9	2.4
- Educational services	158.1	143.7	157.0	164.0	178.2	196.1	224.0	266.3	2.8
- Medical and health services	45.7	40.4	44.0	48.2	52.5	54.4	158.8	66.7	0.7
- Domestic services	65.3	65.9	66.6	67.3	68.0	68.7	69.4	70.1	0.7
GDP at current factor cost	**6,146.3**	**6,487.4**	**7,086.5**	**7,624.7**	**8,100.3**	**8,298.8**	**9,067.8**	**9,413.0**	**100.0**
of which non-agricultural GDP	(2,953.8)	(3,019.9)	(3,430.1)	(3,757.1)	(4,028.8)	(4,237.0)	(4,679.1)	(4,915.1)	(52.2)
Indirect taxes net of subsidies	680.0	741.8	880.7	800.9	806.2	870.6	948.1	1,067.5	10.2 (2)
GDP at current market prices	6,826.3	7,229.9	7,967.2	8,429.9	8,906.5	9,169.4	10,015.9	10,480.5	-
Annual rate of growth of GDP	-	5.5	9.2	7.8	6.2	2.5	9.3	3.8	6.2 (3)

(1) Planned target

(2) Of the GDP at current market prices

(3) Annual average growth arte 1976/77-1983/84

Source: National Revolutionary Development Campaign and Central Planning Supreme Council Secretariat (in "Quarterly Bulletin of National Bank of Ethiopia", June 1984 (last issue)

ANNEX 2

STRATEGIES TO BE ADOPTED IN THE 10-YEAR PERSPECTIVE PLAN TO ACHIEVE THE OBJECTIVES FOR A FURTHER DEVELOPMENT OF THE ETHIOPIAN INDUSTRIAL SECTOR

STRATEGIES TO BE ADOPTED IN THE 10-YEAR PERSPECTIVE PLAN TO ACHIEVE THE OBJECTIVES FOR A FURTHER DEVELOPMENT OF THE ETHIOPIAN INDUSTRIAL SECTOR

- Increase utilisation of capacity;
- increase level of investment;
- introduction of training and incentive schemes including piece rates and boosting labour moral;
- strengthen and establish maintenance facilities;
- strengthen and establish quality control facilities;
- save and earn foreign exchange by strengthening the practices of purchasing, storing and consumption of raw materials, by substituting import by domestically produced materials and by manufacturing more foreign exchange earning products, particularly food, leather and textile products;
- organize handicraft sector into producers co-operative and subsequently into small-scale industries;
- develop design and engineering research for selection of appropriate technologies;
- co-operate with foreign investors in export oriented and technologically sophisticated activities;
- improve organization of the sector by strengthening and establishing new state agencies to render services to the sector and by bringing under the supervision of the Ministry of Industry plants presently operating outside it;
- create employment opportunities by taking appropriate measures in raw materials procurement, opening new marketing and introducing favourable lending and tax policies, and by expanding small-scale industries through co-operative, mass organizations and individuals;
- establish factories in the various regions by exploiting the natural resources of the country and adopting a policy of regional development, strengthening the regional offices of HASIDA and the linkages between small and large-scale industries.

ANNEX 3

WINE MARKET STUDY

A. THE DOMESTIC MARKETING-MIX OF THE ETHIOPIAN WINE

B. THE FOREIGN MARKET OF THE ETHIOPIAN WINE

C. THE FOREIGN MARKETING-MIX

D. MODELS OF COMMERCIAL ORGANIZATIONS

E. INTERNATIONAL LEGISLATION ON WINE PRODUCTION AND TRADE

WINE MARKET STUDY

CONTENTS

A. THE DOMESTIC MARKETING-MIX OF THE ETHIOPIAN WINE

A.1 PASSAGE TO A "MARKETING-ORIENTED" VISION AND THE RIGHT POSITIONING OF THE PRODUCT

From the purely technical point of view, the marketing-mix analysis consists of breaking down the product - the Ethiopian wine - into its characteristic components (product, price, distribution, promotion).

Before dealing with this matter, it is necessary to introduce the subject from a methodological point of view, describing the market approach according to the "marketing" policy.

At the origin of every marketing strategy, there is an exact definition of the *target* to achieve and of the necessary *"steps"* needed for this purpose. It is therefore determinant for every action to be undertaken, to determine the *exact positioning* of the *product*.

Positioning is the most suitable sale policy in one or more *market segments*, to be reached by the product. Therefore a choice must be made on which consumer's needs have to be fulfilled and whom "must be" satisfied.

Afterwards, it will be proceeded firstly from a *market vision oriented* only towards the product and its "physical" production, then to another one oriented towards the market and consequently towards the consumer or that specific class or classes of consumers (chosen as a target, to be reached), buyer of the product. All consequent actions will be therefore referred to the fulfilment of his needs, tastes and requirements.

In order to achieve the best attainment of sales targets and profits, it is necessary to anticipate the tendencies of the chosen market segment or segments, promptly conforming the marketing approach to the consumer needs.

A market segment will be subdivided in undersegments of consumers with homogeneous peculiarities and needs in their consumption tendencies.

These segments will be the target to achieve through the op - timal combination of the marketing-mix elements (product, price, distribu tion, promotion).

As a consequence of the wine positioning, the instruments of the marketing-mix should be chosen for attacking (according to aims, capacity, dimension and nature of the Ethiopian market) the market segment or segments representing the main goal.

From an analysis of the Ethiopian beverage sales it was observed how wine holds the 4th position in the market with 7%, while beer holds the first position with 44%. Therefore it is important to *foresee the future market share* represented by the wine.

To this purpose the following questions have to be assessed:

a) to which class or classes of consumer apply to;
b) whether wine should be positioned as *table product, soft drink* or in *both segments;*
c) what kind of actions should be carried out in regard to *beer,* now representing the most *competing* product, taking into consideration that both products are under a *monopoly* system;
d) how many brands and which type of wines shall be put on the Ethiopian market;
e) which price and packaging policy;
f) what kind of promotional and advertising actions should be carried on.

A full evaluation of items d, e,f will be carried out in the following chapter. Items a, b, c regarding the product positioning will be dealt below.

In a competing market situation, the selection of the consu - mer class, to which the producer must refer, is determined by the *price.*

Adapting this definition to the Ethiopian beverage market , which is under a monopoly regime, it is worth observing that the *high pri ces* puts the Ethiopian wine in the upper or medium-upper consumers sec tion, enjoying a higher purchasing power. As a matter of fact, even lo -

wer price wine (Sariss) should be incorporated in the upper-medium section of the market taking into consideration certain economic indicators like the PNB pro capita (130 $), the daily purchasing power (0,67 Birr) and the relation urban population/rural population (11,3% - 88,7%).

It was estimated, on the basis of existing data on the Ethiopian sales of wine (quantity per kind and price), that the weighted average unit sale price is about 3,20 Birr/litre, corresponding to 2,40 Birr per bottle of 0,750 litres.

This price turns out to be very high, since in other producing countries it is possible, for the same price, to buy high quality genuine wine.

Quality is a determinant element, because wine is a product long since appreciated, and also considering consumer to whom it is aimed for. This second aspect must be attended to and evaluated more accurately by Awash Wineries.

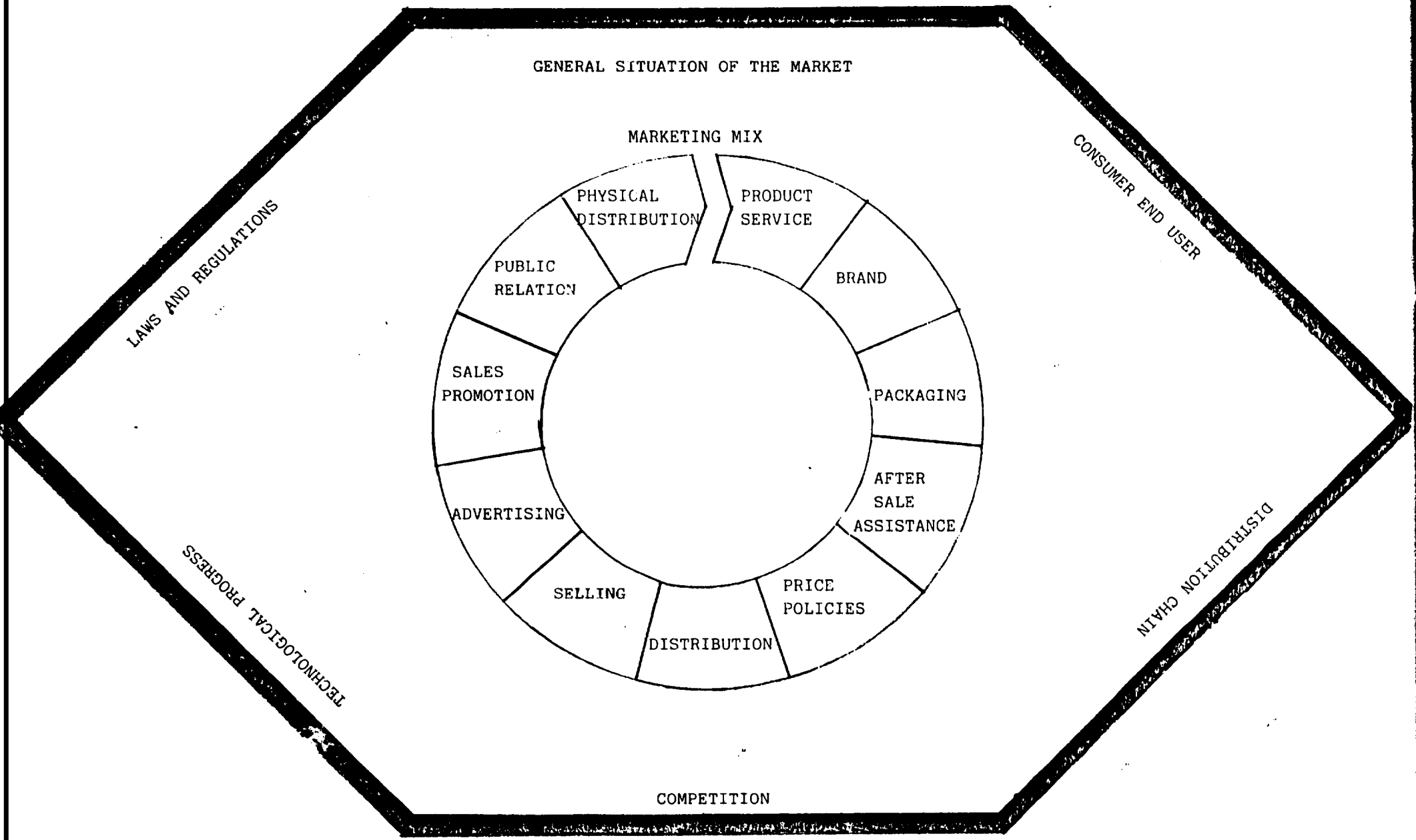
As a matter of fact, the wine in Ethiopia, both as a table beverage and as a soft drink, faces the direct competition of beer, benefiting of excellent sales and a deep-rooted purchasing tradition.

Both wine and beer are products managed by the same Goverment agency, in a monopoly regime. Thus, the E.B.C. should choose between an *istitutional policy*, addressing a direct appeal to the consumers for a greater use of beverages in general, and a *product policy*, with the purpose to encourage a greater consumption of the product-wine, in order to reach a higher market share, but, on the other hand, penalizing the remaining beverages.

A.2 THE MARKETING-MIX: DEFINITION, METHODOLOGY, OPERATIVE STRATEGY

The scheme reported in the following page - a " marketing wheel" - is a synthesis of what will be illustrated later on (product, quality, packaging, price, distribution, etc.).

THE MARKETING WHEEL



The marketing-mix is th best arrangement of marketing ele - ments in order to determine the result of every strategy.

Marketing activities, carried on by the firm with the purpo - se to introduce its products in the market, must be combined among them through the 4 foundamental mentioned channels (product, price, distribu - tion and advertising) in a careful plan determining the final result of each company action.

Every channel of the marketing-mix will be duly analysed: the findings will be compared to the present Ethiopian situation.

A.3 ANALYSIS OF MARKETING-MIX COMPONENTS

A.3.1 The product

The product represents the center of the marketing policy of a firm: in the specific context of marketing-mix it is the element on which price, distribution, advertising and promotion as well as other par ticular or complementary factors are based on. The role entrusted to the product in the mix is that of responding in the best way to consumer de - mand and market. On the contrary, should the product introduced in the market respond more to the firm requirements than to market demand, (al - though it has other effective mix factors), it will not have many chance of a real success.

Product is the most important marketing-mix component, since all the remaining elements depend on it. It is the fundamental element on which all mix relates to in order to effectively satisfy the consumer needs and expectations.

In this context, product is the turning point of all the mar- keting elements and not an element apart. First of all, it will concern the market demand and supply and then the consumer in particular, distri- bution channels, price policy, promotional and communication strategies , selling actions. Product will be regarded in its dynamic development , together with its particular aspects, everything being fully dependent on market changes and general environment.

So, even product management becomes a valid marketing mix element, satisfying market requirements and consumer demand, coping with competitors and taking advantage promptly of technological changes causing an extension of its life cycle, so preventing its obsolescence.

In order to demonstrate the validity of the above principles , the Graphic n° 2 describes the product life cycle together with mar - keting actions and policies that the Ethiopian Beverage Corporation should put in practice, in order to keep under its control the beverage market trend, especially as far as the wine is concerned.

These methodological suggestions aim to induce Ethiopian wine producers in changing their production organization. Since the Ethiopian wine has always been sold as "the product", in the future the product must be what the consumer wants to buy.

This kind of approach would limit,among other things, the continuous and sudden changes in the beverage market and would favour a better knowledge of it.

Therefore, the prevailing equation should be: consumer supre- macy over manufacturing firm.

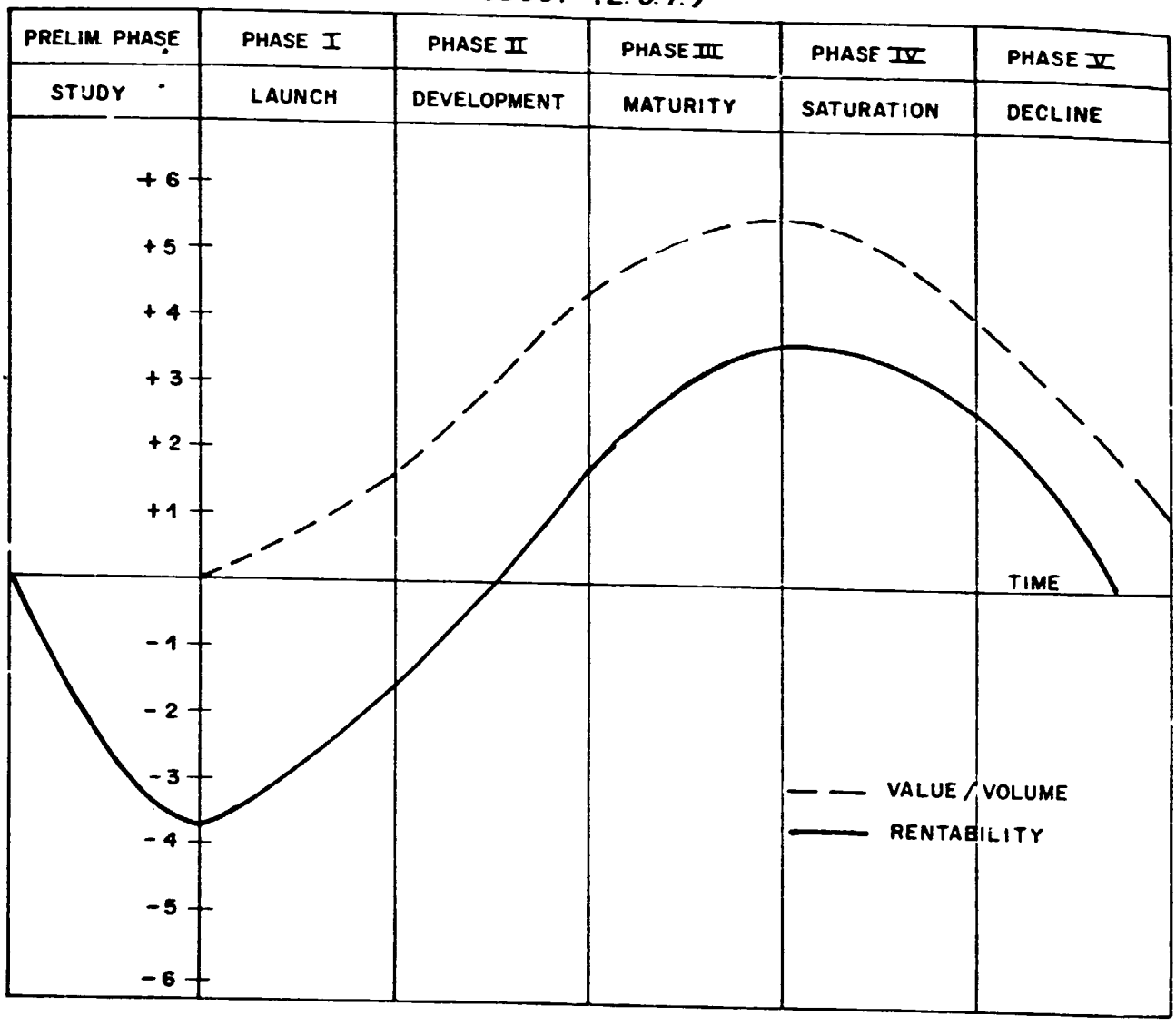
A.3.2 The quality

The main feature of any food-stuff is the quality, synonimous of a good, natural, reliable and tempting product. As far as the product wine is concerned, this aspect is even more important, since the latest tendencies of wine commercial valorization aim to its genuinity.

The preliminary appraisal referred to tests carried out on two Ethiopian wine brands regarded as vintage wine: Dukam and Kemila. Results have been negative since both brands turned out to be of inferior quality. Therefore it is necessary to improve processing techniques. As already suggested, the E.B.C. will have to strengthen its relations with the vineyards owner: the Horticultural Development Corporation.

Graphic n° 2

LIFE CYCLE OF THE PRODUCT (L.C.P.)



STUDY	LAUNCH	DEVELOPMENT
- Plant realization - Product study - Marketing research - Market test - Product policy - Sale policy - Marketing plan - Verification	- Distribution policy - Product policy - Price policy - Communication policy - Promotion policy - Marketing plan - Verification	- Marketing plan - Productive units development - Distribution policy - Communication policy - Promotion policy - Verification

MATURITY	SATURATION/DECLINE
- Marketing plan - Price policy - Promotion policy - Verification	- Price policy - Promotion policy

The increase of wine production from fresh grape should be given urgent attention, since any marketing strategy aiming to gain successfully the market, is based on the quality.

Quality must be a production target in order to become the best commercialization instrument. This aspect will be duly evaluated later on, when Ethiopian wine perspectives in the foreign market will be analysed. Since in Ethiopian there is no real tradition in taste and wine consumption, the qualitative aspect is not at the moment essential for local consumers.

However the possibility to use in the future more and more fresh grape, even if blended with dry raisin, is worth taking into consideration.

A.3.3 The packaging and bottling regulations

A.3.3.1 Packaging

Commodity packaging is a very relevant and delicate aspect related to the aims to be achieved. Some suggested actions, connected with physical production and distribution, are called *technical goals.* Others, strictly related to the market and to the product sales within the markets, are called *marketing goals.*

Technical goals

The selected packaging allow its filling up by utilising the existing machineries. Filling and labeling operations must be carried out speedily, avoiding break-downs and other inconveniences. Packaging must be easily placed in containers; storage will take place involving minimum space.

Marketing goals

They are following:

a) packaging size;
b) selection of raw material;

c) shape;
d) labels (size, colours, drawing);
e) text.

These items will allow a better entry and presentation of the product on the market.

A.3.3.2 Bottling marketing producers

The bottling involves: bottle selection ; cork selection and capsule selection; packaging; wrapping.

Bottle selection

Since there is a great variety of bottles, it is necessary to choose the bottle, according to the kind of wine to be sold. The Ethiopian industry has at its disposal: the litre (100 cl), the half a litre (50 cl), the saint-galmier (90 cl), the Angiò (75 cl), the Angiò and Touraine derivation (35 cl), the Borgogna (75 cl), the Champegnotte (80 cl), the Veronica (72 cl). In regard to the mass production, it is advisable to bottle in bigger containers, as the magnum bordolese (1,5 lt).

Some suggestions are the following:

- low income consumers: one litre, white bottle;
- medium and high income consumers: bordolese white bottle (75 cl).

Cork and capsule selection

In order to reduce production costs and sale prices, especially for medium-low income classes, metal caps are suggested. For higher income consumers, the use of half-length paraffined cork (see Table n° 1) is recommended. Protective capsules should be made of tinned lead or plastic.

Packaging

The bottle packaging is an important element in bottling. It includes the label application and the bottle collar.

Tab. 1 - CHARACTERISTICS OF THE MOST COMMON CORKS

LENGTH		Diameter	CORK LENGTH		Diameter
In lines	In mm	(in mm)	In lines	In mm	(in mm)
6	13,5	5	9	20	18
6	13,5	6	9	20	19
6	13,5	7	12	27	14
6	13,5	8	12	27	15
6	13,5	9	12	27	16
6	13,5	10	12	27	17
6	13,5	11	12	27	18
6	13,5	12	12	27	19
6	13,5	13	12	27	20
6	13,5	14	12	27	21
6	13,5	15	12	27	22
6	13,5	16	15	35	19
9	20	11	15	35	19
9	20	12	15	35	20
9	20	13	15	35	21
9	20	14	15	35	22
9	20	15	15	35	23
9	20	16	15	35	24
9	20	17			

Labelling

Labelling procedures are very strict and accurate, so that the buyer could not be mistaken. It is suggested that the Ethiopian wine industry use label logotype designed by a copy or a graphic or a skilled printer (^).

Wrapping

It is very important because it involves two elements: the box price and the safety of the bottle. The suggested card-board box must be very resistant to perforation. Boxes will be closed with clips, adhesive tape and glue. It is essential to metal strap the boxes.

A.3.4 The price

High prices of the Ethiopian wine are influenced:

- by relatively high production costs (imported material, bottles, excess of personnel, etc);
- by a high taxation on the factories gross profit (50%).
  Very likely also distribution costs could be lower should a more rational sectorial structuration be introduced.

High taxation can be justified by the fact that wine is considered a luxury product, at any rate not an essential product for the population, like food-stuffs.

In spite of this taxation, net profits can be considered at a reasonable level, even if they showed constant decrease during the last 4-5 years, due to the progressive increase of the costs, not compensated by higher sale prices, held unvaried in this period.

(^) European regulations on wine trade establish that the logotype must be homologated by the International Labelling Committee in Paris.

In order to increase the consumption, mainly the habit in wine consumption, it is necessary to introduce a price policy aiming at reducing production costs, surcharges on profit, and taxation, so to obtain a lower sale price.

This result is related also to the above mentioned packaging costs reduction and to a distribution and advertising policy, not involving high expenses.

It is fundamental, at this stage of the marketing, to switch from the present concept based on a small sales volume with high prices and high profits, to the real "marketing-oriented" policy, aiming at satisfying the consumer needs with the application of lower prices.

Consequently, there will be a higher sales volume where lower prices are concerned, always aiming at the kind of product and market segment to which is referred to.

Even if such a policy would very likely involve low profits for the firms (^), it is important, at this stage of product life cycle and competing beverage market trend, to identify the wine consumption habit and the product "popularity", instead of carrying on a policy mainly based on production and profit, without considering both market and consumer.

(^) It is worth remarking that the reduction of the firms profits could turn out to be negligible taking into account the higher volume of wine sales.

A.3.5 Distribution and sales

The distribution and sales policy involves all the aspects regarding the product shifting from manufacturing site to the selling point.

As far as wine market distribution is concerned, the firm must be in condition to reach as many selling points as possible, also ensuring the safe delivery of the product. In this matter the main problem to be solved, is to choose the right market distribution channel.

In a standard market situation, the specific distribution and sales goals to be achieved are: sales volume and quotas definite - ly settled; distribution techniques; number of selling points; sales a- gents.

The present policy carried on by Awash Wineries on the do - mestic market is to devide the selling points in two sectors: Addis Ababa (12 areas + 1 special) and Provinces.

Each area of Addis Ababa has an average of 250-300 custo - mers (mainly private groceries and bars) to which wine is directly deli vered by the producers by means of their own means of transport and sa- lesmen . So the producers are wholesalers at the same time.

The same method is used in the provinces near Addis Ababa , where deliveries are carried out by company trucks.

The Awash Wineries employ a limited number of sales agents for distant areas, not reached by their trucks.

All the operators in this distribution system will follow belonging to the governmental organization or controlled by it. It is worth remarking that, due to the expected development of the domestic sales, the system based on direct and capillary deliveries will invol- ve more and more the use of means of transport and personnel, causing higher costs.

The producers' distribution approach can be therefore referred to as "direct". Since the wine partners in the distribution network are those of the traditional system (wholesalers, retailers), or of the associated trade (major distribution channel: agents, voluntary chains, consumption co-operatives) or of the catering, the Awash Wineries distribution choice can be based on the following indications:

- to establish their presence on the market with a more direct approach, using their own representative offices, opening stockage warehouses; this would involve higher expenses being necessary to increase the number of cars (purchase of one convertible - tanker truck);
- to stimulate new openings in the Ethiopian market by promoting the presence of major distributors and by increasing the number of the agents.

A.3.6 Advertising and promotion

Some kinds of advertising mentioned at this point are not allowed in the country, they are to be retained as examples commonly followed in the wine production countries. Of course the Ethiopian Authorities could, in the future, take into consideration the possibility to introduce modifications in this matter, with a view to support wine market.

Advertising and promotion are relevant conditions in order to give wine the characteristics of a mass product. Therefore any dispersion has to be avoided. Ethiopian advertising resources, even if not comparable with those exploited in the industrially developed countries, must be concentrated and organized in a general framework of a promotional policy.

Communication and promotion investments have to be evaluated, prepared and aimed at, in the 4 different market segment areas, viz: 1) wine for high income classes; 2) wine for medium income classes; 3) wine for low income classes; 4) soft-drinks.

This kind of promotion policy has to be necessarily con - stant and conform to the market, giving an image of continuity and cre dibility to the consumer, involving even the distribution.

As far as promotion is concerned, the most effective poli- cy is to put the wine directly on the consumer's table. For this rea- son the initiatives carried out in selling points will allow the firms to establish a direct contact with the consumer.

Another kind of promotion could be that offering a special incentive as prize competition, inserting under the bottle metal cap a prize, consisting for example, in some other bottle of wine.

Among the advertising and promotion means, the press (local newspapers, magazines) plays a relevant role. Other initiatives to sug - gest in order to reach successfully the consumer are the following:

- to organize wine tests and wine parties for the insiders: distributors, wholesalers, hotel managers, caterers, purchasing managers of major di stribution channels, sommeliers, important persons, etc.;
- to meet qualified journalists during press conferences, especially for the foreign market;
- to attend and to be present at foodstuff fairs, surveys on catering , hotels and communities;
- to organize special discount weeks in hotels and supermarkets;
- outdoor advertising: street billboard, car cards appearing on trucks , buses and taxis.

A.4 MARKETING CRITERIA ON WINE SELECTION

The above mentioned market approach has been referred to as "marketing-oriented", since it suggests to the producers the consumer ten dencies, instead of the market ones. This strategy has been adjusted to each marketing-mix element, through methodological approaches based on the existing situation in the Ethiopian wine companies.

The production stage, dealt with in this paragraph, is one of the most important, since it ratifies the firm production policy sug - gested by the analysis of the market segments to which the company wants to refer to. The next step, after the product positioning, will be the wine selection, for which marketing provides the following methodological strategy:

1st Stage
Classification: the existing products can be selected according to sales promotion, quality, market quotas and profit index. Often this evaluation puts in evidence the necessity of increasing the development of some products and the abolition of others. In this connection, a reduction of the presently wide range of products existing on the Ethiopian market is suggested.

2nd Stage
In order to choose the right products, the procedure must be gradual:

a) sales promotion: for products' having a good trend;
b) quality: gathering all data provided by the Research and Development Production Department, according to consumers' tendencies;
c) profit: for the products having the highest profit margins;
d) final study aiming to the selection of the more suitable products: to be carried out after having selected, evaluated and assembled all the available data.

3rd Stage
After having selected the best products (wine), a further selection will be carried out according to price:

- low income classes: 2 qualities of wine;
- medium income classes: 3 qualities of wine;
- high income classes: 2 qualities of wine.

4th Stage
Use of wine as a soft-drink. Selection of one quality of wine to be introduced on the bar market, having the characteristics of a sparkling taste.

The suggested strategy is very circumstantial, since it includes a study phase (1st and 2nd stages) in which the firm evaluates all the existing data (selling data, market quotas, profits) and a production phase in which the position of the Research and Development Lab becomes essential because the wine production should be improved according to consumers requirements and taste.

Up to now the Awash Wineries have not thoroughly studied the beverage - and in particular - the wine market trends. It is therefore essential to create a marketing unit in the Awash Wineries, in condition to provide up-to-date data related to market trend, consumer requirements, management, etc.

With the purpose to suggest proper wine selection practices , IFAGRARIA wine market expert carried out - with the full collaboration of the E.B.C. - a special survey based on the available data regarding do - mestic sales of wine (by kind, quality and packaging), beer and soft-drink, constantly related to the final consumer apparent social and geo - graphic segments.

Here are some results and recommendations.

Low income consumers

To this segment of consumers, representing the highest market quota, the Awash Wineries offer the Sariss, the cheaper wine. The purpose is to privilege these consumers by implementing a promotional price cam - paign in order to increase consumption. It is furthermore necessary to improve the quality (more advanced production techniques) and the packa - ging of the Sariss, by introducing in the market a new quality of wine (with different characteristics) at low cost which could become an alter-native purchase for this class of consumers.

Suggested price: Birr 1.20-1.50 per bottle (0.750 l).

Medium income consumers

On the basis of the Ethiopian wine production, in this consu-mer segment wines like Gouder (at present 4 Birr per bottle) and Soave (3 Birr/bottle) can be suggested. However these selling prices, due to the above mentioned reasons, are too high. The consumers belonging to this income segment are not usually wine drinkers, but they could be incentiva ted to drink it at least in particular occasions (important dinners, mar-riages, receptions, etc.).

In order to achieve this purpose, wine should be of superior quality compared to a lower price wine and have reasonnable sale prices : between 2.00 and 3.50 Birr/bottle.

In addition to the wines already on the market, a new wine (white dry) could be launched as an Aperitif , at the same price.

High income consumers

In this section of national consumers as far as the domestic market is concerned the hotel and restaurant customers are included, such as tourist foreign residence in Ethiopia and Ethiopian citizens of higher classes, having undoubtedly a higher income and accustomed to drink good quality wines.

Therefore, Ethiopian Wineries must be, in the future, in condition to offer to this kind of consumers vintage wines.

As a matter of fact,the foreign customers in Ethiopia can be used as an indirect promotional means,but - it is worth reminding - only if the quality of the wine is really superior, viz produced from 100% of fresh grape.

Therefore wines such as Dukam, Gouder, Awash Cristall and A - wash Kemila should satisfy those requirements in the medium run. The promotional price policy implemented on low and medium income sections could be paid off by these consumers.

Suggested price: Birr 4.00-6.00 per bottle.

The wine as an Aperitif

A strategy aimed at gaining consumers from the soft-drink sector is to put in the market a white slightly sparkling wine to be ser - ved as an Aperitif.

This strategy has been carried out successfully in Italy, where an increasing appreciation towards this quality of wine (white and sparkling) was observed. As a matter of fact, the producers of these brands (Prosecco, Cartizze, Galestro, Cavit and so on) have noticed a considerable increase of the domestic consumption as well as of the foreign de - mand (USA particularly).

It is worth remarking that the implementation of this new fashion among consumers has required from the producing firms a relative - ly high investment for advertising, largely paid off by the sales.

This kind of product could be launched either on the domestic Ethiopian market or on the foreign one, with a limited production in order to improve the image. Also this wine must be produced only with fresh grape in order to guarantee and qualify the product.

Suggested price: Birr 6.00-8.00 per bottle.

B. THE FOREIGN MARKET OF THE ETHIOPIAN WINE: PROBLEMS AND PERSPECTIVES

B.1 RECENT TRENDS OF THE WINE WORLD MARKET: PRELIMINARY CONSIDERATIONS

In the last years, the world wine market has gone through two major constrasting characteristics: the progressive increase of wine production and, contemporarily, the decrease of wine consumption particularly in those countries where the consumptions had always been high.

This situation has caused many problems to international trade, penalizing seriously the producers, who have experienced a consistant decrease in wine demand, even from those countries considered traditional buyers. The compression of the market has brought to a greater competitiveness between major wine producers, forcing them to characterize even more their product, by proposing lower prices, higher quality standards or innovative packaging, in the effort of keeping their market shares.

As a matter of fact, the technological innovation introduced in the bottling and vinification techniques, can nowadays grant higher quality standards to the product, so that the range of available wines is now increasingly wider and diversified. It is superfluous to say that this situation has mostly penalized those countries (small producers) having to face legislative and commercial barriers, in the effort of penetrating the most profitable markets.

Africa, in particular, has suffered from this unfavourable trend causing serious difficulties for the wine producing countries (Algeria, Tunisia and Morocco), where vine cultivated areas have been reduced.

According to the data provided by the "Office International de la Vigne du Vin" (the international organization whose members are grape growers in the almost all the countries) overall area of grape cultivation in the world has reached, over the last years, 10.100.000 hectars, distributed among 50 different countries. The growth of the cultivated areas has proved to be consistant in almost all the continents, with the exception of Africa, where, in the last 15 years, it has been assessed a decrease of 21,2%, as shown in the table n. 3.

Tab. 3 - WORLD MINE AREA
(x 000 h)

	1930	%	1950	%	1965	%	1990	%	1930-1950	1965-1990
EUROPE	6.470	90,4	6.469,3	77,7	7.585	75,2	7.204	71,2	+ 0,29 %	- 4,7 %
ASIA	45	0,6	721.0	8,6	1.166	11,6	1.459	14,4	+ 1.502 %	+ 25.1 %
AMERICA	265	3,7	569,0	6,8	706	7,0	934	9,2	+ 114 %	+ 32,3 %
AFRICA	341	4,7	584,3	6,2	565	5,6	445	4,4	+ 33.7 %	- 21,2 %
OCEANIA	46	0,6	55,0	0,7	57	0,6	75	0,8	+ 19,5 %	+ 31,6 %
TOTAL	7.147	100	8.357,6	100	10.059	100	10.117	100	+ 16,9 %	+ 0,6 %

In the period of greater expansion of grape cultivation (1960-1970), the countries with older traditions in wine production (Italy, France and Spain) had reduced their cultivated areas, while in eastern Europe (mainly in U.R.S.S.), in America (Argentina and USA), in South Africa and even in Asia (Turkey, Iran and Syria, where grape is also cultivated as fresh fruit and for producing dry raisin) the cultivated areas were consistently increased.

Even in the analysis of wine production development to an increase of wine output throughout the world corresponds a reduction in Africa (see following Table n. 4).

The Awash wineries are not yet in a position to penetrate the foreign markets, because they are not in the condition to produce high quality or vintage wines from fresh grape, since only a small quantity is cultivated in the country production costs are high (and sale prices).

The Awash wineries not yet required level of knowledge, and penetration into the foreign market not very likely because they are not able to make wine, but because they are not in the condition to produce high quality or vintage wines from fresh grape, since the latter is, at present, cultivated in the country in a very low quantity and a rather high average production costs (and sale prices).

As a consequence, it is obvious that the Ethiopian wines cannot compete not only with those produced in France, Italy, Spain, Portugal, etc., but not even with those produced in the remaining African producers like Tunisia, Morocco, Algeria and South Africa.

These countries have only been able to reach a good level of competitiveness after years of promotional investments, and by offering medium quality wines at a low price, allowing them to be competitive with European wines. In fact, their export strategy was first tested in some African countries (Senegal, Ivory Coast, Gabon and Cameroun), where northAfrican wines gained consistent shares of the markets.

A very important aspect, solved by these countries, is represented by wine legislation with the purpose to regulate the production of D.O.C. wines, to protect high quality production and to guarantee a renewed image to the product in a moment of an increasing appearance in the market of unqualified wines.

This aspect is discussed in detail in the section E of the Annex.

Tab. 4 - WORLD WINE PRODUCTION

(x 000 hl)

	1930	%	1950	%	1965	%	1980	%	1930-1950	1965-1980
Europe	132.550	81,5	148.965	77,2	225.976	79,7	281.590	79,5	+ 12,3 %	+ 24,6 %
Asia	180	0,1	575	0,3	1.762	0,6	3.166	0,9	+ 219 %	+ 79,7 %
America	12.620	7,8	23.383	12,1	33.152	11,7	52.107	14,7	+ 85,3 %	+ 57,2 %
Africa	16.450	10,1	18.471	9,6	21.846	7,7	12.960	3,6	+ 12,3 %	- 40,7 %
Oceania	740	0,5	1.567	0,8	923	0,3	4.482	1,3	+ 112 %	+ 385 %
TOTAL	162.540	100	192.961	100	283.659	100	354.305	100	+ 18,7 %	+ 24,9 %

In this framework Ethiopian wine export perspectives can be retained as good only at medium-long term, and when the planned rehabilitation and reorganization of the whole wine sector will be achieved and put into action by the E.B.C.

In particular, the advantages stemming from the erection of a new modern winery (production and bottling unit) are based mainly on the fact that an improvement of vinification techniques and of the wine standard and a lowering of prices could be achieved also in the short-middle term. The integration of new technologies would consequently renew the "image" of the Ethiopian wine, that, due to its improved quality, could be marketed more easily.

Meanwhile even an expensive promotion campaign supporting export would not be effective unless the wine quality be drastically improved.

In conclusion it can be said that, at short term, world market perspectives for wine are unfavourable, due to the economic crisis now faced by many producing countries. Therefore it can be expected that, due to the increasing supply of wine, the national barriers, protecting the local producers, will be reinforced.

For a better understanding of the situation, a synoptic table n. 5 on wine world trade (1971-1982), is reported in the following page.

B.2 COMPARATIVE ANALYSIS ON WINE CONSUMPTION IN THE AFRICAN PRODUCING COUNTRIES

B.2.1 General

The following analysis tries to prove the importance of an indicator like the pro capita consumption in order to foresee the development perspectives from the point of view of the wine producers.

Data on wine consumption in the world are shown in the following Table n. 6.

Table 5 - WORLD WINE TRADE

(000 litres)

		1971	1973	1975	1978	1979	1980	1981	1982
World	i.	34.439	43.513	44.736	43.968	48.365	46.750	52.198	51.153
	e.	34.007	44.960	43.071	41.843	51.890	49.550	53.092	52.501
Italy	i.	339	1.124	204	236	231	203	181	151
	e.	9.306	10.468	14.125	13.494	10.106	16.132	20.407	20.719
France	i.	5.555	8.945	9.340	7.649	8.685	8.900	7.933	7.686
	e.	4.963	7.275	6.321	7.667	8.634	9.225	9.205	9.435
Germany FR	i.	6.714	7.699	7.310	7.070	9.100	9.350	10.176	9.945
	e.	452	679	820	1.480	1.642	1.805	2.060	2.251
Belgiu-Lux	i.	1.317	1.507	1.710	1.922	2.075	2.100	2.224	2.276
	e.	67	122	100	263	192	155	260	182
United King-	i.	2.149	3.567	3.264	3.925	4.200	4.250	4.675	4.520
dom	e.	96	116	130	122	228	175	155	132
Holland	i.	929	1.209	1.425	1.724	1.733	1.810	1.976	2.076
	e.	216	76	10	26	33	27	29	51
E.E.C.	i.	17.374	24.709	23.877	24.160	27.551	25.381	27.966	27.654
	e.	15.109	18.744	21.517	23.160	30.855	28.012	32.367	33.142
Austria	i.	287	566	892	261	233	265	318	353
	e.	104	182	173	247	443	470	518	445
Switzerland	i.	2.000	2.452	2.182	2.104	2.180	2.345	2.745	2.674
	e.	13	14	7	50	57	32	9	8
Spain	i.	5	83	8	22	10	9	13	----
	e.	3.646	4.078	5.175	3.710	6.394	5.460	6.138	4.989
Portugal	i.	2	2	----	----	----	----	1	1
	e.	2.019	2.096	2.092	1.376	1.425	1.615	1.366	1.450
U.R.S.S	i.	7.755	6.766	8.520	5.837	6.868	7.500	7.942	6.664
	e.	210	92	131	140	110	570	171	151
Australia	i.	24	30	53	78	85	69	75	90
	e.	65	62	66	46	53	61	75	84
Japan	i.	28	185	189	219	287	379	369	440
	e.	14	32	17	2	----	----	1	1
Argentina	i.	----	----	----	----	----	----	7	----
	e.	63	91	167	365	88	71	169	159
U.S.A.	i.	1.310	2.042	1.759	3.561	3.589	3.880	4.261	4.516
	e.	16	32	52	142	223	290	395	342
Canada	i.	327	474	559	1.124	1.052	1.110	1.239	1.266
	e.	----	----	----	----	----	----	----	----

i = import

e = export

Tab. 6 - WINE CONSUMPTION IN THE WOR.

(litres per caput/year)

Countries	Pop. 1982 per 1000 ab.	1960	1965	1970	1975	1979	1980	1981	1982	1983	198
Algeria (^)	19.590	12	1	0,7	0,5	1,5	1	1	1,2	----	---
Argentina (^)	28.430	76	85,5	92	83	77	75	73	73,8	----	---
Australia (^)	15.050	5	6	8	12	16	17	18	19,1	----	---
Austria	7.600	20	29	34	35	35,5	35,5	35	35,3	----	---
Belgium (^)	9.900	7,5	11	13	17	20	20,5	21	21,6	----	---
Brasil (^)	126.810	1,5	1,5	1,5	2	2,5	2,5	2,5	2,6	----	---
Bülgaria (^)	8.890	20	20	18	20	22	22	22	22	----	---
Canada (^)	24.630	2	2,5	4,5	6	8	8,5	8,91	9,46	----	---
Czechoslovakia (^)	25.370	13	15	14,5	16	15,5	15,5	16	14,6	----	---
Chile (^)	11.490	46	56	43	43	46	45	44	54,7	----	---
Cyprus	645,5	11,5	12	8	7,5	9	9,5	10	11,8	----	---
Columbia	27.090	-	-	-	-	-	-	-	-	----	---
Cuba	9.720	-	-	-	-	-	-	-	-	----	---
Dominicana	5.118,9	3	4	6	11	13,5	14	16	17,35	----	---
Finland	4.820	1,5	2,5	4	8,5	8	8	8,5	8,75	----	---
France (^)	54.220	126	117	109	104	92	91	90	86	----	---
Ethiopia	39.477	-	-	-	-	-	0,21	0,21	0,2	0,22	0,2
Germany RF (^)	61.640	10	16	17	23	24	25	25	24,8	----	---
Germany RD (^)	16.740	3	4	5	7	9	9,5	9,5	10,2	----	---
Japan (^)	117.650	0,4	0,4	0,3	0,4	0,5	0,5	0,6	0,6	----	---
Ireland	3.460	2	2	3	4	4,5	4	4	3,4	----	---
Island	232	0,5	1	1,5	2,5	5	5	6,8	7,3	----	---
Israel	4.020	3	4	3,5	3,5	4	4	4,5	4,5	----	---
Italy (^)	56.280	108	110	113	103	90	89	85	91,4	----	---
Jugoslavia (^)	22.520	21	24	28	28	26	27	27	26,9	----	---
Libanon	3.010	2	2,5	2	2	2	2	2	2	----	---
Luxemburg	366	31	30	37	41	39	42	41	48,3	----	---
Morocco (^)	20.650	3	2	1,5	2	1	1	1	1,3	----	---
Mexico	74.000	0,2	0,25	0,25	0,23	0,22	0,26	0,26	0,26	----	---
New Zealand (^)	3.160	2	2,5	2,5	8	11	12	13	13,2	----	---
Norway	4.410	1,5	1,5	2	3	3,5	4	4	3,45	----	---
Holland	24.253	1,5	3	5	10	11	12	12,5	14,5	----	---
Paraguay	3.270	-	1,5	2	2	2	2	2	1,9	----	---
Peru	18.709	1	1	1	1	1	1	1	0,6	----	---
Poland	36.200	4	4,5	5	7	9	9	8	6,3	----	---
Portugal	10.060	105	108	85	90	75	73	75	78,4	----	---
United Kingdon	56.067	1,5	2	2,5	5	7	7	7,5	7,8	----	---
Romania (^)	22.640	21	29	23	33	35	28	28	28,9	----	---
Spain (^)	37.930	53	60	62	76	65	64	59	57	----	---
South Africa (^)	30.100	8	8,5	9	10	8	8,5	9	9,55	----	---
Sweden	8.330	3	3	6	8	9	9,5	9,5	10,4	----	---
Switzerland (^)	6.468	36	38	41	43	45,5	47	48	48,2	----	---
Tunisia (^)	6.510	6	6,5	3	3	2,5	3	3	3	----	---
Turkey (^)	47.279	0,4	0,9	0,85	0,55	0,6	0,6	0,8	0,4	----	---
U.R.S.S (^)	269.990	4,5	7,5	15	13	14	14	14	19	----	---
U.S.A. (^)	232.000	3	3,5	4,5	6,5	7,5	7,5	8	8,3	----	---
Hungary (^)	19.950	29	32	37	34	34	35	35	25	----	---
Uruguay	2.950	25	30	26	25	25	25	25	25	----	---
Venezuela	14.710	-	-	-	0.77	0,7	0,7	0,7	0,73	----	---

(^) Producing countries.

A constant decrease in wine production has been noticed in the African wine producing countries during the last years, particularly in Algeria, Tunisia and Morocco. These countries have been penalized by the limited domestic consumption and by the difficulties met in their traditional market openings.

Such a situation has led to either dropping or reorganising their grape cultivations.

This tendency finds no verification in the Ethiopian situation, where there was a boom in wine production during the last years, without a consistent repercussion in the pro capita consumption, still lower than in countries like Algeria, Tunisia and Morocco, where the muslim religion is observed.

As a matter of fact, in these countries producers reserve an average of 70% of the wine production for the foreign market. A different situation is occurring in Ethiopia where the wine producers have not yet prepared the proper structures for the penetration on the foreign markets for the reasons reminded the previous point B.1. Therefore the concepts of high quality, creation of a commercial image for the Ethiopian wine, research of positive market openings, consolidated connections with foreign agents, concorrential prices, etc., could be put into action only after the planned restructuration of the wine sector, including grape production.

The pro capita wine consumption is the factor on which the Ethiopian wine sector must plan as far as the strategies and steps to put in practice in order to change this unfavourable situation is concerned.

B.2.2 Statistical indicators

Pro capita consumption in the African producing countries is reported below (litres/year):

Country	1980	1981	1982
Ethiopia	0,21	0,21	0,20
Morocco	1	1	1,30
Algeria	1	1	1,20
Tunisia	3	3	3
South Africa	8,25	9	9,55

For each of these countries some data on production and con - sumption of wine are also shown as follows:

1) **MOROCCO**

- **Production**

Year	000 hl
1980	450
1981	700
1982	650
1983	400

- **Consumption**

During the last years wine consumption was, on the average, about 1 litre per caput, a level rather low due to religious reasons. Wine is mostly consumed by foreigners resident in the country and by tourists, especially in the restaurants and hotels. Anyhow a certain share of wine (10-15%) is absorbed by Morocco non-mohammedan minorities (incl. Israelites). Of course a break-down of the the total consumption (in the domestic market) of wine from residents and non residents can be hardly estimated.

2) **ALGERIA**

- **Production**

Year	000 hl
1980	2.670
1981	1.400
1982	1.350
1983	1.000

- **Consumption**
  Wine consumption in Algeria, during the last years, was, on the average, about 1 lt pro capita. Comments in this matter are similar to the consumption in Morocco.

3) **TUNISIA**

- **Production**	**Year**	**000 hl**
	1980	450
	1981	400
	1982	500
	1983	430

- **Consumption**
  Wine consumption, during the last years, was on the average about 3 lt pro capita. Motivation and causes are similar to the consumption of Morocco. The larger consumption is due to a great extent to tourism and to a better distribution in restaurants, hotels, bars, stores and government supermarkets.

4) **SOUTH-AFRICA**

- **Production**	**Year**	**000 hl**
	1980	383
	1981	400
	1982	397
	1983	430

- **Consumption**
  Considerable importance, as far as the consumption is concerned, is given by the population and by the different ethnographical composition, reported below (last census):

white:	4,446,000 inhab.	(18.5%)
colored:	2,253,000 inhab.	(10.5%)
asiatic:	792,000 inhab.	(3.3%)
black:	18,320,000 inhab.	(67.7%)

These data, allow to understand the size of the market, since the higher purchasing power, together with the customs and the capacity to appreciate products of a certain quality, is almost confined

to the white population . In its turn, the ethnographical compo - sition of the white population is extremely diversified, and their wine preference is conditioned by the customs of respective coun - try of origin.

B.3 THE POTENTIAL IMPORTING COUNTRIES OF ETHIOPIAN WINE

For each of some potential importing countries of Ethiopian wi ne, some relevant data concerning import's balance , production, consum - tion, distribution channels and existing wine legislation are presented hereafter.

Countries taken into consideration are those having imported in the past Ethiopian wine, therefore to be considered priority countries in a future perspective, when Ethiopian Wineries will be restructured and or ganized also by the commercial point of view.

1) NIGERIA

- *Ethiopian wine exports:* 900 litres (1985), approximately 0.05% of the total Nigerian imports.
- *Local production:* none.
- *Consumption:* it concerns mostly the foreigners (Europeans, etc.) , resident and not resident (tourists), generally oriented to consu- me high quality wines (French, Italian).
- *Imports (1983, table wines):*

Suppliers	**Hl**	**% on total imports**
Italy	2,359	14.5
France	9,233	56.7
Portugal	3,788	23.3
Egypt	892	5.5
Total	**16,272**	**100.0**

- *Distribution:* wine is mainly distributed (85%) by big stores, the remainder (15%) is divided between restaurants and hotels.

- *Legislation:* the product is imported mainly in bottles of 0.75 lt and 1.5 lt. According to recent enquiries, in Nigeria there is no specific legislation regulating the sector.
  Certificates of analysis are not requested.

- *Proposed actions:* it is advised to contact the most important hotel chains in order to organize promotional wine parties for the Ethiopian wine.

2) **KENYA**

- *Ethiopian wine exports:* Kenya is the only country with which Ethiopian Wineries have been able to develop continuative trade relations:

. 1980	4,050	litres
. 1981	26,100	litres
. 1983	18,000	litres

- *Local production:* in Kenya two types of wine (dry and medium-dry) are produced, obtained from the papaya fruit.
  Papaya wine for domestic consumption has enjoyed an increasing success with the local consumers, gaining a consistent share of the market to the detriment of imported wines, mainly because of its low price. Local production in 1984 has been 180,000 lt.

- *Exports:* none.

- *Consumption:* annual wine consumption in Kenya has stabilized, over the last few years, to around 750,000 lt.

- *Imports (1983, table wines):*

Suppliers	**Hl**	**% on total imports**
France	390,505	52.4
Italy	221,247	29.7
Spain	50,448	6.8
Portugal	41,504	5.6

Suppliers	Hl	% on total imports
Austria	33,541	4.5
Others	8,115	1.1
Total	**745,360**	**100.0**

- *Distribution:* the products are directly imported by the Kenya Wine Agency Ltd., reaching the market through two possible channels:50% hotels and restaurants; 50% traditional retail dealers.
- *Legislation:* not existing.
- *Proposed actions:* considering that trade relations had already been developed between Ethiopian Wineries and Kenya Wine Agency, it would be advisable to renew such previous contacts, by proposing a pluriannual trade contract.
  Several wine parties should be organized in the touristic resorts of Mombasa and Malindi.

3) IVORY COAST

- *Ethiopian wine exports:* 180 lt (1984)
- *Local production:* none.
- *Consumption:* the selection of usual consumers is limited to 15% of the local catholic community, plus the approximately 200,000 white residents. The muslims (23%) don't drink wine, while the rest of the population (animists) only drink wine occasionally instead of palm wine.
- *Exports:* none.
- *Imports (1983, table wines):*

a. <u>in bottles up to 5 litres, 12°</u>

Suppliers	Hl	% on total imports
Italy	9,857	35.7
France	9,660	35.0

Suppliers	Hl	% on total imports
Spain	7,040	25.5
Others	1,048	3.8
Total	**27,605**	**100.0**

b. in bulk, 12°

Suppliers	Hl	% on total imports
Italy	77,454	13.4
Algeria	353,983	61.4
Tunisia	22,135	3.8
Morocco	1,125	0.2
Portugal	16,740	3.0
Spain	2,838	0.5
Greece	99,175	17.2
France	2,217	0.4
Others	715	0.1
Total	**576,386**	**100.0**

c. in bulk, over 12°

Suppliers	Hl	% on total imports
France	2,823	57.9
Italy	1,235	25.3
Others	820	16.8
Total	**4,878**	**100.0**

So in total 608,869 hl (1983).

- *Distribution:* the distributing channel of bulk wines and originally bottled wines (up to 5 lt), is controlled by importers dealers (wholesale), who are organized to assure a prompt delivery in the selling points (supermarkets, bars, etc.).

In parallel, there exists a certain number of exclusive shops selling only highly selected products.

- *Legislation:* A specific legislation for the imported wine, does not exist. However French regulations are adopted.
  Labelling is left to the producers discretion . For the rest, only trade proceeding and behaviour or the control over the foreign suppliers, can be considered a guaranty. The requested certification for imports in the country is, in addition to the invoice and the other transport documents, the certificate released by the Société Générale de Surveillance (S.G.S.).
  The S.G.S. is called also to check the adequacy of the prices and their correspondence with the quality declared in the laboratory tests annexed. The intervention of the S.G.S. is requested only for shipments whose value is superior to 1.5 billion Fr. C.F.A.
  The above mentioned certificate is the only one accepted in Ivory Coast and it is essential for customs clearance.

- *Proposed actions:* the Maghreb countries are present on the Ivory Coast wine market with massive exports at very competitive prices. Therefore the chances of the Ethiopian wines to enter the market seem very limited, unless considerable promotional investments are allocated.

4) GERMANY D.R.

- *Ethiopian wine exports:* 152,244 litres in 1983 and 150,003 litres in 1984. Germany D.R. is among the countries having signed with E.B.C. a trade agreement at governmental level.
  Nevertheless it must be noted that these sales are not settled in foreign currency, since payments are made directly through the National Bank of Ethiopia, in Birr.

- *Local production:* There is a small wine production (about 50,000 hl). The best known East Germany wine abroad is the Meissen.

- *Consumption:* wine consumption in GDR is very limited, mainly because the Germans traditionally drink beer, but also because of the high prices of the wines that can be purchased locally.
- *Exports:* none.
- *Imports (table wines, campaign 1981) (^)*

Suppliers	**Hl**	**% on total imports**
Italy	46,563	3.0
Algeria	100,031	6.5
Bulgaria	348,600	22.5
Jugoslavia	353,200	22.8
Rumania	208,300	13.4
Hungary	493,700	31.8
Total	**1,550,394**	**100.0**

- *Distribution:* distribution is generally channelled through food stuffs retail shops, wine shops, confectioners , tobacco shops and supermarkets.
- *Legislation:* the rules regulating wine trade are particularly strict and bureaucratic. For example, it is pointed out that the dimension of bottles, sold on the market, must be 0.7 lt. The label of the imported wines, bottled by the producer, must show the following indications:
  .. statistical number given by the importing authority;
  .. production year (or vintage year);
  .. contents (0.700 cl);
  .. wholesale price.

(^) Data reported in the Statistiche Jahrbuch der DDR, 1982.

- *Proposed actions:* the agreements with the Socialist countries are to be considered, on the whole, positive. In fact, at present , they constitute the only certain export outlets for the Ethiopian Wineries. The perplexities about them concern their real consi - stence, which, according to the E.B.C., would amount to 750,000 lt/year. It is suggested that Ethiopian Wineries request wine payment in foreign currency (U.S. $), and not in Birr, and obtain a more punctual respect of the agreement clauses.

5) U.R.S.S

- *Ethiopian wine exports:* 189,000 litres in 1985
- *Local production:* (in million hl):
  . 1981 34.4
  . 1982 34.9
  . 1983 38.1
- *Consumption:* there are no official data assessing global consum - ption, but it can be estimated that it ranges between 46 and 50 millions hl in 1983.
- *Exports:* in 1983: 117,321 hl of high quality wines and 25,573 hl of wines in bulk, for a total of 142,894 hl.
- *Import procedures:* all imports are managed and channelled through 2 foreign trade state agency:
  . V/O Sojuzplodimport for bulk wine;
  . V/O Vmeshposyltorg for bottled wine;
  No custom duty is imposed on wine imports.
- *Imports (1983, from the main suppliers, value in thousand Roubles)*

Suppliers	**Quality wine**	**Table wine**
Bulgaria	286,819	3,142
Hungary	162,878	2,461
Spain	...	8,587
Italy	...	7,929
Rumania	31,061	...

Suppliers	Quality wine	Table wine
Jugoslavia	636	245,141
Algeria	5,638	3,696
Czechoslovakia	...	146,390

- *Proposed actions:* the remarks made for Germany D.R can be consi - dered valid also for U.R.S.S.

C. THE FOREIGN MARKETING MIX

C.1 THE QUALITY OF WINE: ESSENTIAL ELEMENTS FOR SUCCESSFUL EXPORTS

Wine destined to the market must respect the existing laws and regulations both from a commercial and qualitative point of view. The non observance of the legislation can seriously endanger the success of the exports.

Wine must respond to market requirements and not the producer choices and taste.

The actions suggested in order to improve the marketing-mix of the Ethiopian wine mainly concern two specific stages of the production cycle: the vineyards, in order to obtain good quality grapes and the wine processing technologies, in order to produce good quality wines.

Therefore the best production and market policy will be achieved by promoting at cultivation level, the selection of the most suitable kinds of vines, and, at the processing level, the choice of the proper equipment (and therefore the techniques) and qualified personnel, in view to produce, bottle and sell wines responding to all relevant requirements of the foreign consumers.

This introduction is needed for the purpose to comment and compare wine standards running in and requested by the foreign market with the kinds and characteristics of the Ethiopian wine.

Many of the considerations about wine quality expressed as regards the domestic market, are valid as well for the foreign markets, but, in this framework, their respect becomes more important because of the more sophisticated demand and taste of the potential consumers and of the presence of more traditional and qualified competition.

The fundamental aspect that must be understood by the Awash Wineries is that export wines must be produced from 100% selected fresh grapes. In order to achieve this goal stricter contacts and agreement,

should be reached between the Ethiopian Beverage Corporation and Horticulture Development Corporation with the priority purpose to produce wine from selected fresh grape.

The laboratory tests carried out on "Kemila" and "Dukam" revealed that these kinds do not meet European and American quality standards.

The fact that the best Ethiopian wines have been qualified of low quality, proves that their access to the most profitable markets can be planned by the Awash Wineries only when this quality gap will be bridged.

C.2 PACKAGING: THE IMPORTANCE OF THE LABEL FOR A SUITABLE PRESENTATION OF THE WINE

C.2.1 International regulations on labelling

The most important International regulations concerning the labelling are hereafter summarized.

According to the E.E.C., the indications in the label can be compulsory or optional.

a) Compulsory indications

They must be grouped on the main label and written in clear and indelible print, sufficiently big in order to stand out clearly. These indications must be separated from the other details and drawings.

In particular:

- Mention "Table wine - Vin de table".
- Producer name and full address (individual or firm). This information aims to inform the consumer about the exact role played by the firm in the wine production process (bottled by, distributed by, produced by, etc.).

- Effective alcoholometric content. In the "Awash Kemila" bottles, for example, an alcoholometric content of 11.5% is declared, while in reality, according to analysis test, it is 9.75% (the minimum content requested by E.E.C. is 10 degrees). The alcoholometric content is not indicated in the "Dukam".
- Nominal volume of the container expressed in litres, centilitres or millilitres, eventually accompanied by the measure unit locally used. For volumes higher than 1 litre, the figures must be 6 mm high; for the volume ranging from 0.200 to 1 litre, they must be 4 mm high (^).

b) Optional indication

- Colour: red, white or rosé. Some additional definitions can be added in order to better describe the wine (ruby, garnet, amber, golden, straw-coloured).
- Progressive number of the bottle, to be normally print on the bottle collar.
- Brand name: in order to inform the consumers about the origin and the quality of the wine.
- Name or participation status of the persons and firms involved in the commercial circuit of the product, importers included.
- Suggestions made to the consumers, as far as the best way to serve wine is concerned.
- Distinctions, prizes, awards: in this connection it is worth observing that similar information (gold medals awarded in Sofia and Leipzig to "Dukam" wine) are drawn with little care on the labels.

The above described specifications are applicable to the "table wines" and are not valid for D.O.C. wines (^^).

(^) Recently bottles of 75 cl. have been recommended in the international trade.

(^^) Controlled Origin Denomination.

We have limited our research to these specifications, since the characteristics of the Ethiopian wines have not the quality standards requested by D.O.C. wines.

C.2.2 The label design

Nowadays the marketing men pay a particular attention to the label design because it characterizes the product for ever in the eyes of the consumers, and is therefore a powerful selling instrument.

It is therefore suggested that the Ethiopian wineries improve printing and drawings on the bottles labels with the purpose to be in accordance with the international wine regulations and trade habits.

Designs reported on "Kemila" and "Awash Cristal" labels can be considered of medium quality, whereas those reported in "Dukam's" ap - pear of lower quality.

Morever the drawings of vineyards reported on "Cristal" and "Kemila" labels could be retained not legal according to the internatio - nal laws. In fact this kind of drawing is allowed only if wine come from the vineyards and firms reproduced on the labels. In the contrary case , consumer - not acquainted - can believe that wine really is made with fresh grape grown in the reported vineyards.

Some example of labels are annexed.

C.3 ADVERTISING AND PROMOTION

C.3.1 General and recommendations

Advertising and promotion are essential elements to the launch of a new line of products on a foreign market.

A/3/59/50

Vino da tavola
Indicazioni obbligatorie.

VINO DA TAVOLA

IMBOTTIGLIATO DA
PAOLO PONZO
ROCCHETTA TANARO

0.720 LITRI | R.I. V/101/AT | 12 % VOL

giusta

Vino da tavola
Indicazioni obbligatorie e facoltative

VINO DA TAVOLA

rosso rubino

IMBOTTIGLIATO DA
PAOLO PONZO
ROCCHETTA TANARO
VERSARE CON CAUTELA

0.720 LITRI | R.I. V/101/AT | 12 % VOL.

giusta

VINO DA TAVOLA

vino novello

IMBOTTIGLIATO DA PAOLO PONZO
VITICOLTORE IN ROCCHETTA TANARO
DISTRIBUITO DA FRANCHI - TORINO

2 LITRI | R.I. V 101/AT | 12 % VOL.

giusta

In this framework, the organizational and structural sugge - stions expressed in the domestic marketing-mix (A - 3.6) become more rele vant and important, because, in this case, wine must face a competiti - ve market situation.

Therefore the exporters must firstly know which promotional means (news papers, television, wine parties, etc.) have been used by the competitors and at what cost.

For the Ethiopian wine - not yet popular in the foreign mar - ket - the adoption of a strategy capable to approach the consumers is suggested.

Of ccurse, as often previously stressed, a promotional com - paign would remain unsuccessful should quality of the Ethiopian wine be not drastically improved and its price lowered. In particular, Ethiopian wine must be competitive under these last two aspects, at least with Maghreb wines (Morocco, Algeria, Tunisia). All this implies the planned restructuration of the whole wine sector.

One of the most effective ways for the launch of the Ethiopian wine in the foreign markets is the participation of the E.B.C. to the in- ternational Fairs.

C.3.2 The International Fairs

These occasions are very important for wine exporting compa - nies, because they can present their products and verify directly the rea ction of the consumers and, at the same time, of the competitors.

It is recommended that the participation to these fairs is planned carefully and in advance, in order to avoid a waste of financial resources and to obtain a better success.

Another possible strategy to optimize the participation to a fair is to announce, in some selected and specialized magazines, where it will be eventually foreseen the presentation of a new line of products.

For this purpose, the firm must know which are the most important wine fairs. Then, according to the foreign marketing goals, the participation will be decided, programmed and realized in order to introduce the Ethiopian wine on the markets which have been chosen.

Some "characteristic parameters on fairs" are shown here below:

a) Wine producers' motivation to participate:
   27.0% prestige
   19.5% to create international contacts
   19.4% to increase the foreign sales
   14.7% advertising and promotion
    9.4% presence of potential customers
    6.5% importance of the fair
    3.5% presence of competitors and to test the market

b) In what percentage fairs are part of the firm promotion (answers in %):

In total	29.0
From 70 to 100%	29.0
From 30 to 70%	25.0
From 10 to 30%	8.0
Inferior to 10%	9.0
Total	**100.0**

c) Evaluation of the participation (trade contracts) as regards sales increase:

After the 1st fair	+ 5%
After the 2nd fair	+ 12%
After the 3rd fair	+ 18%

A list of the most important international exhibitions in which the wine sector is represented in the following annex.

MOST IMPORTANT EXHIBITIONS (^)

VERONA - ITALY
17 - 22 April

	VINITALY - International Wine Fair
Products displayed	Italian and foreign wines, cellar accessories, products for bottling, preserving and selling wines.
Frequency	Annual
Exhibit area	75,000 sq. m
Exhibit rates	Lit. 40,000
Opening time	9.00 - 19.00 (9.00-14.00 operators)
Entry	Reserved to operators
Open to the public	14.00-19.00; 20 and 21 April all day. On 22 April exhibition ends at 13.00 hrs.
Exhibitors	1,500 (1984)
Visitors	60,850 (1984)
Organization address	ENTE AUTONOMO FIERE DI VERONA - Viale del Lavoro 8/A C.P. 525 - 37100 Verona, Italy - Tel. 045/504.022 - Telex 480538 FIEREVR

(^) Where wine sector is represented.

DUBAY, Arab Emirates
27 - 31 October

	International fair of hotel and restaurant equipment
Area	3,300 sq. m
Rates	235/315
Opening time	10,00 - 13,00/18,00 - 21,00
Entry	Open to the public
Exhibitors	200
Visitors	5,000 - 7,000
Organization address	Fairs and Exhibitions Limited, 51 Doughty Street - Gray's Inn London WC 1N2LB - Tel. 01 - 8318981 - Telex 299709 Efanee G

LOS ANGELES, U.S.A.
17 - 19 February

	International fair of pastry foodstuffs (Winter Edition)
Products	Foodstuffs, ready dishes, wines, liqueurs, pastry
Frequency	Every 6 months
Area	54,200 sq. ft.

LONDON, (Olympia) - England
25 February - 1st March

	London - I.F.E. - Foodstuffs, beverage, wines and spirits - International fair.

Frequency	Every 2 years
Organization address	Interbuild Exhibitions Ltd.-11 Manchester Square, London WIM 5AB - U.K. - Tel. 01/4861951

BUDAPEST,(International Fair Centre), Hungary
27 September - 06 October

	Budapest Autumn International Fair
Products	Consumption commodities
Frequency	Annual
Area	80,000 sq. m
Entry	Open to the public
Exhibitors	1,500
Visitors	800,000
Organization address	Hungexpo - Budapest International Fairs and Exhibition Division - Budapest X Dobi Istvan UT 10 - H - 1441 Budapest - P.F. 44 - Hungary Tel. 573.555 - Telex 224684 HEXPO

GENOVA, Italy
13 - 19 November / November

	Bibe - Wines,Spirits and other Beverages
Frequency	Annual
Exhibit area	150,000 sq. m
Opening time	09.30 - 19.30
Entry	Open to public
Organization address	Fiera Internazionale di Genova - Piazzale J. F. Kennedy, 1 - 16129 Genova - Tel. 010/5956-51/71 - Telex 271424 FIERGE I

TORONTO, (Automative), Canada
06 - 13 February

	Viva '85 - Foodstuff and Beverage Fair
Organization address	Viva Food & Beverage Exp. Inc. 28 Edison,E. Mart, Place Bonaventure P.O. Box 1471 Mon - treal, Quebec H5A IH5 - Canada - Tel. 514 / 8719122

KÖLN, Germany
12 - 17 October

	ANUGA - Food World Market
Products consume in the international sector	Food/non food
Gastronomy	International sector: techniques and equip ment for hotels, restaurants and other com- munities
Technich	International technic sector for food in - dustries, assistance and trade
Frequency	Biennal
Area	205,000 sq. m
Rates	DM 140,50
Entry	Reserved to operators
Exhibitors	4885 (3208 foreigner) (1984)
Visitors'	172,320 (1984)
Organization address	Messe und Ausstellung GmbH - Koeln Postfach 210760 - 5000 Koeln - Deutschland - Tel. 0221/8211 - Telex 8873426 a mua d - Rapp. Italy "Camera di Commercio Italo-Germanica" Via Napo Torriani 29 - 20123 Milano - Tel. 02/669.893

D. MODEL OF COMMERCIAL ORGANIZATIONS

D.1 ORGANIZATIONAL SCHEMES

In the transition from a "product-oriented" to "marketing-oriented" vision, there are some essential changes that must be carried out in the wine factory organizational structure.

This structure will consequently be forced to adapt itself to the new organization of the firm. It will then be necessary to create in the personnel a new spirit and a new mentality "market-oriented" by carrying out internal structural changes, introducing new sectors and by creating new functions and managerial staff.

A new organizational plan does not affect only the existing structures in order to increase their efficiency, but influences also the personnel, who need some time to adapt and accept the new marketing principles.

So, even if the firm decides to exploit external experienced marketing men, there will be no immediate effect, because they need to enter on familiar terms with the firm and perceive the existing mentality. Therefore every innovation should be carried out in phases.

The schemes shown in the following page describe how a "product-oriented" firm (Table n° 1) can become an integrating marketing organization (Table n° 3) , passing through an intermediary phase (Table n° 2).

The scheme of Table n° 1 shows that the commercial manager is also responsible for the sales organization.

In the intermediary structure (Table n° 2), the commercial manager (who, in this case, becomes marketing Director) begins to delegate the control over sales activities to a sales manager. He will also employ and utilize a market research section and an advertising section , in order to use marketing techniques with the aim of programming and influencing the product planning. He will therefore provide the techni -

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Table n° 1 : EXISTING ORGANIZATION

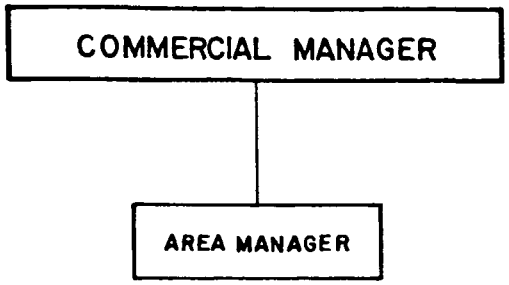


Table n° 2 : INTERMEDIATE ORGANIZATION PLAN

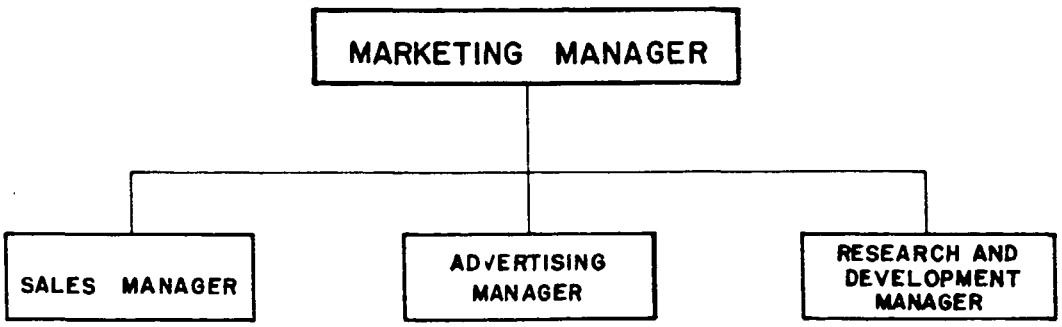
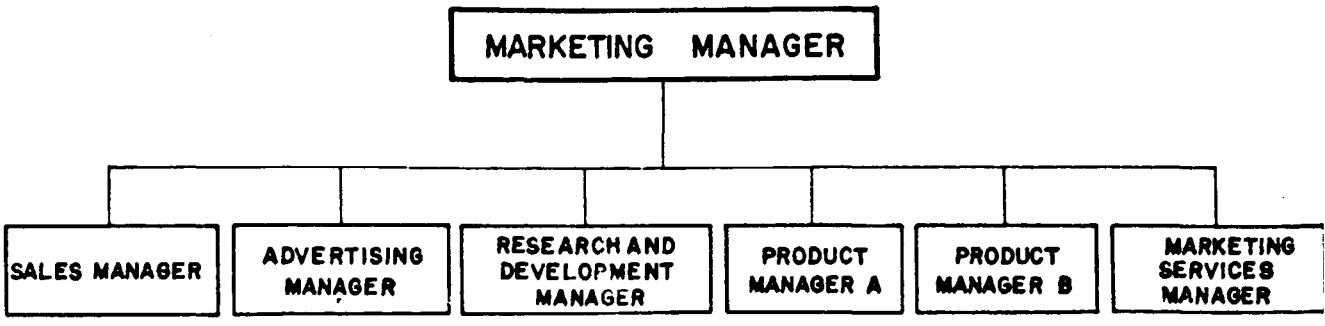


Table n° 3 : FINAL ORGANIZATION PLAN



cal sections with market data, collected during the market tests, carried out on the products to be promoted.

In the third scheme, the complete sales responsability will be delegated to a sales Director, the "product manager" will acquire im - portance in the structures because of their responsability over the planning and co-ordination of the activities connected with the different products or line of products.

The responsibility of the marketing services will be data collection, market statistics and research, and also co-ordinate clients services and the activities connected with the stock turnover and the product distribution.

At this stage, the marketing manager will have delegated the responsability for the various marketing tasks. Therefore he will concentrate on market strategies and on the organization, planning, direction and control of his section. This organization will maximize sales and profits, optimize existing activities and will simplify the expansion of the future ones.

The marketing position in the Table n° 4 is directly under the orders of the General Direction, together with all the other major tasks.

The marketing firm organization can be structured: in functions, in geographical areas, per classes of clients, per products.

a) Organization by functions

The various functions listed in Table n° 5 will not be necessarily adopted all together, since their organization will depend upon the firms dimension, market characteristics, market goals, and the commercial policy carried out.

b) Organization by geographical areas

This organization is suitable for large geographical areas, as described in Table n° 6, and therefore can be considered a North-European or American solution. In Italy, for example, this approach is used for

Table n°4 : CENTRALIZED ORGANIZATION

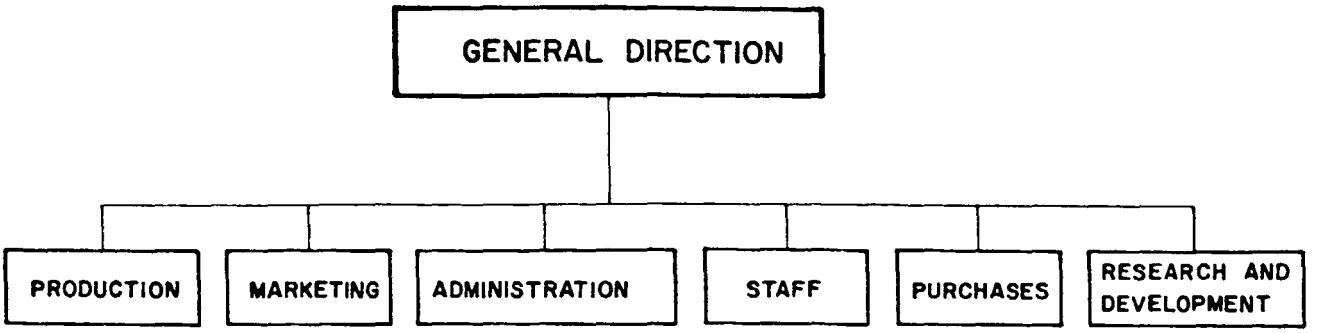
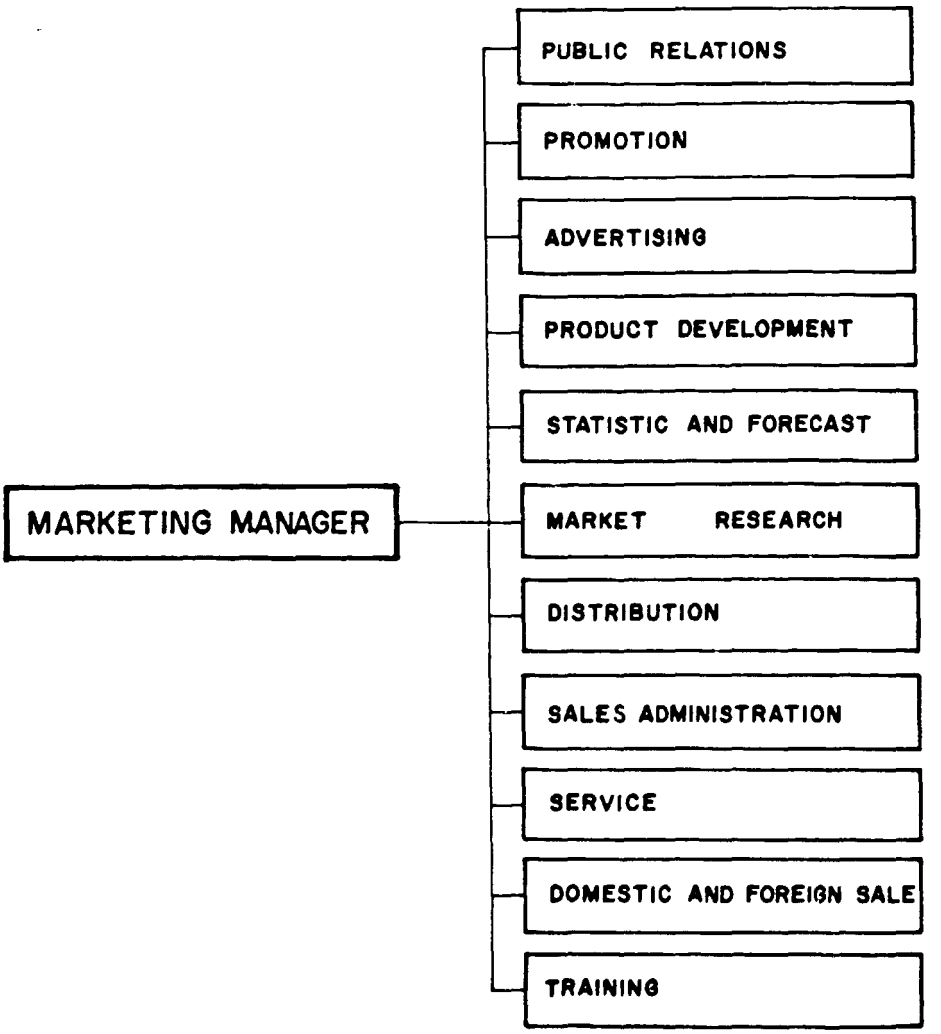


Table n°5: COMMERCIAL FUNCTIONS DEPENDING ON THE MARKETING MANAGER



the commercialization of commodities in multi-regional zones (called Nielsen Areas). Each area covers different regions with homogeneous features.

c) Organization by classes of customers or distribution channels

In this kind of organization exposed in Table n° 7, the firm is guided by the different classes of customers with the company activities and expressing different needs. Therefore such an organization can respond more promptly to market changes since the firm operates according to the customers requirements.

d) Organization by products or product line

This type of organization, exposed in Table n° 8, is particularly suitable for firms producing a wide range of products. In this framework, it is relevant the role of the "product manager" (or "brand manager") who can be retained as the general manager of the product (or line of products). The "product manager" must co-ordinate every action connected to this product and is therefore responsible for the attainment of the forecasted profits in the framework of the guidelines prepared by the marketing manager.

D.2 RECOMMENDATIONS FOR THE ETHIOPIAN WINE INDUSTRY

Wine producers, wanting to carry out a marketing policy with the purpose to expand wine consumption in the country or abroad, must reorganize their commercial structure.

The selection of new organizational plans is not undoubtedly a simple problem, particularly when the changes imply the introduction of a marketing section. The necessary transformation is only in organizational roles and concerns mainly a new orientation and approach to the market, involving the operating strategies of all company sections.

In fact, every firm has its history, image, personnel, management style and its strong and weak points.

Table n. 6 - ORGANIZATION BY GEOGRAPHIC AREAS

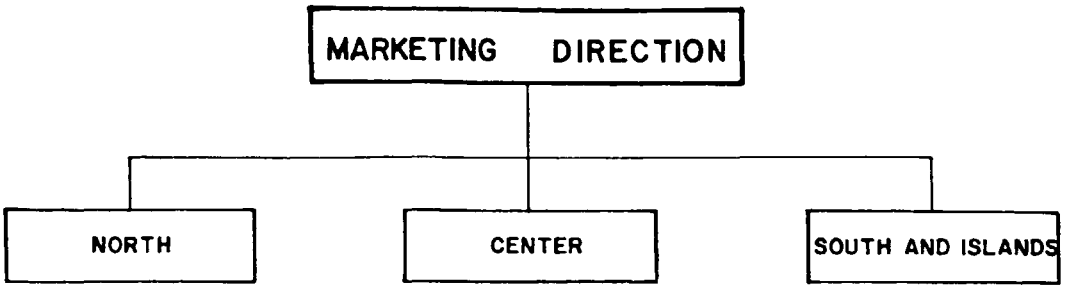


Table n. 7 - ORGANIZATION BY CLASSES OF CUSTOMERS

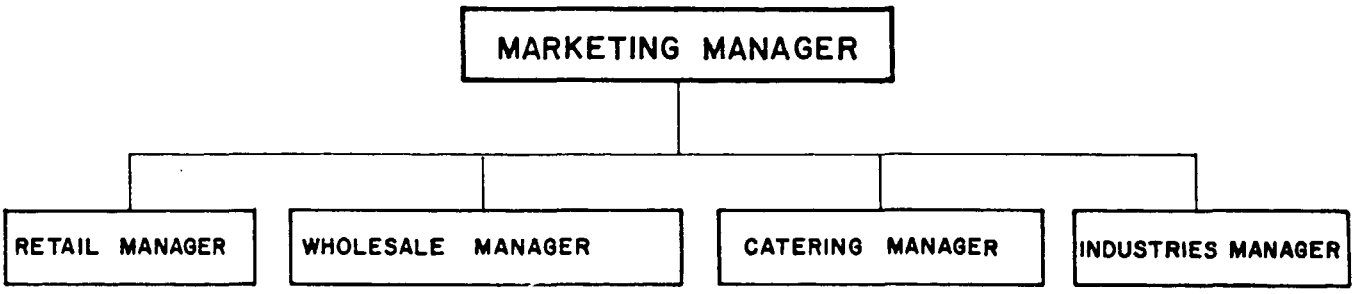
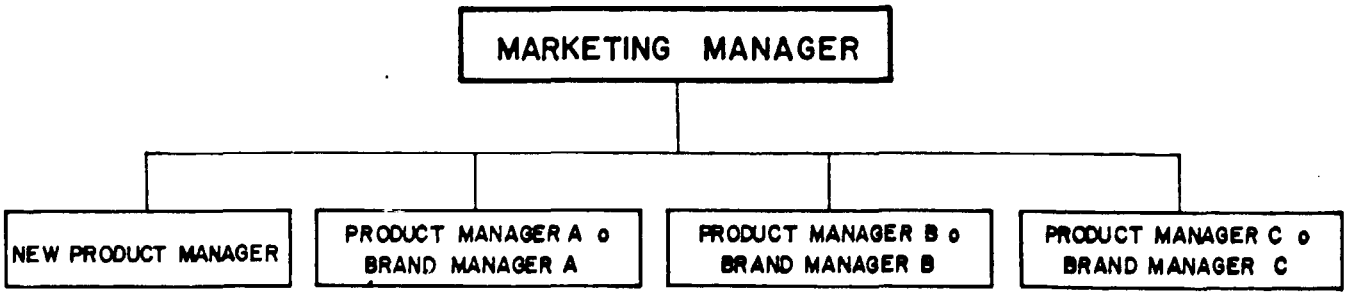


Table n. 8 - PRODUCTS ORGANIZATION



The adoption of marketing structures and techniques must be realized gradually, allotting, in successive phases, part of the personnel to the new tasks and the new operational philosophy.

The management will mainly operate in all sections, from research to engineering, from production to administration, from purchasing to logistic, in order to fullfill the request of the market and, consequently, the consumers requirements.

The organizational models, exposed in Tables 1,2 and 3 are the most suitable for the Ethiopian context. This shift from the present model will take place gradually, passing from an exclusively sales-oriented policy through the second and third phase, which require the creation of the marketing sector. The latter, more and more articulated, will coordinate and control the sales activities and the sections newly established (advertising, market research, product management). The new Marketing Manager will have a completely different profile from the Sales Manager. He will be the market strategist of the firm, entrusted with the identification of the activities and the products corresponding better to consumption trends and market requirements.

In particular, this kind of marketing structure will be responsible for the product commercialisation on the foreign markets, where the competition from other countries is very intense. The differencies between markets and consumers in the various countries are considerable; therefore it is recommended to choose and study marketing policies adaptable to the local characteristics.

E. INTERNATIONAL LEGISLATION ON WINE PRODUCTION AND TRADE

The E.E.C. wine legislation is presently considered the most complete and rigorous document in this matter. The regulations concerned are numbered 337/79, 338/79 and 355/79, all issued on 5 February 1979 (^).

The most important passages of these regulations are summarized as follows.

In Art. 1 of Regulation 337/79 all the products originating from fresh grape are described (juices, must, wines, vinegar, light wine and dregs and pomace, from pressed grapes); the relative definitions are given in annex.

From Art. 2 to 15 the Regulation deal with the price policies and the member states interventions.

The wine trade with the other countries is regulated in Art. 16 to 26. The contracts are subordinated to the presentation of an export document, fixing also the reference price under which it is not possible to export.

The rules regarding the control of the production and development of the vineyards (from Art. 27 to 31), concern both the plant nursery sector, the new vineyards and the re-planted ones, if the existing plants have been improved. Additional recommendations are also given about the quitting of the cultivations or uprooting of vineyards.

The rules on the enological processing techniques and the introduction of products for consumption are dictated by Art. 32 to 54.

(^) The legislation can be, of course, requested from the E.E.C. General Secretary.

These rules fix modalities and characteristics of each product, when distributed on the market. In particular, the rules regard the use of sugar, the pressing of dregs, pomaces and sediments in order to assure the trade of wines with the suitable characteristics for consumption.

Regulation n° 337/79 reports the General Dispositions about the correct price policy to be adopted by Member States producers (Art. 55 to 70). Particular rules are dictated in case of sudden increases of price above the "orientating price", fixed by the E.E.C. Commission.

Regulations n° 338/79 and 355/79 deal respectively with high quality wines produced in certain selected regions and the general rules about the denomination and the presentation of wines and musts.

A 4/1/2

ANNEX 4

DESCRIPTION OF THE EXISTING WINERIES

A. AWASH LIDETA BRANCH

B. AWASH MAKANISSA BRANCH

C. ADDIS KETEMA BRANCH

D. ASMARA WINE FACTORY

DESCRIPTION OF THE EXISTING WINERIES

CONTENTS

A. AWASH LIDETA BRANCH

A.1 GENERAL INFORMATION

It is the most important Ethiopian winery and is the technical, commercial and productive co-ordination centre for the remaining Addis Ababa wineries.

Location: Addis Ababa
Administration: State firm, depending from the Ethiopian Beverage Corporation (EBC), a division of the Ministry of Industry
Object: production and bottling of wines (principal), sparkling wine vinegar, soft drinks, liqueurs, aperitives.
Personnel: 343, with a total cost of 778 million Birr (september 85)
Wine production: (1984/85): 5,4 million litres (90% red, 10% white)
Main inputs and origin: (1984/85):
- fresh grape: 1,809 q, from Ethiopian vineyards;
- dry raison: 3,726 q, imported mainly from Turkey;
- sugar: 8,490 q, from Ethiopian Sugar Estates;
- concentrated must: 50q, from other wineries;
- other auxiliary products (tartaric and citric acid, biammonical phosphate, sodium benzoate, etc.): about 90 q, imported from various countries;
- bottles: supplied by a local glass factory;
- cork: imported from Spain and Portugal.

Market: almost all the wine production (98% in 1984/85) is sold in the local markets, in bottles or flasks. About 75% of the wine is destinated to Addis Ababa, Shoa region and most of the Southern regions. In the latter case deliveries are carried out by the winery personnel (salesmen, drivers, sales helpers), using winery owned transport (vans, trucks and trailers).
Sales to the other regions are carried out through external sale agents. Exports relatively increased only in the last three years (170-190,000 litres of wine in each year), with destination Germany D.R. and URSS through Trade Protocol Agreements. Sales to other countries - mostly African, among which is Kenya - are modest and irregular (from 4,000 to 22,000 litres yearly in the pe -

riod 1978-1985).
Exports are carried out by this winery for the remaining wineries (Ketema, Makanissa).

A.2 PRODUCTIVE CYCLE AND PRESENT SITUATION OF THE EQUIPMENT

A.2.1 Processing cycle

- Preparation of the dry raisin through steeping in water;
- Wine making from fresh grape (200 quintals every 3 days during vintage for an annual total of 1,900-2,000 quintals), carried out with the equipment for dry raisin, with an additional pressing-disteming unit. Fresh grape is only the starting point of the whole processing cycle. At any rate the kind of wine obtained must be considered of a good quality and therefore suitable for the foreign market;
- Addition of yeast, enzymes, etc.;
- Wine drawing from the vats and passage of the liquid mass to the fermentation vats, in which sugar, citric and tartaric acid, biammonical phosphate, some other similar products, and water are added in order to reach the required volume and alcoholic degree (fermentation time: about 30 days);
- Decanting and clarification;
- Cold stabilization of only a part of the liquid mass, due to lack of power and to the age of the equipment;
- Filtration;
- Cold bottling of wine with a modern automatic installation with a capacity of 3,500-4,000 pieces/hour, depending on recovered or new containers.

This last unit is equiped with an automatic washing machine of 10 ranks, an isobaric filler with 32 siphons, a 4-head corking device, a labeling machine for 3 pieces and related conveyors.

Bottling is carried out by an additional smaller installation equiped with two rotating washers, a gravity filler with 12 siphons, a screw capping machine and 3 corkers. (to be repaired).

A new two stages pasteurization unit with a capacity of 50 hl, is not operational.

The factory produces also a modest quantity of sparkling wine, obtained with the use of carbonic acid, in a small semi-automatic plant, in good condition.

The winery laboratory for analysis is not yet fully equiped.

A.2.2 Constraints

The main constraints are stricltly related to the present conditions of at least a part of the equipment, which could be kept in good condition through a more assiduous and careful control by an expert and with the timely replacement of all parts subjected to wear. This for the machines whose spare parts are still available.

Other constraints are represented by insufficient capacity, space and equipment for the refrigeration, movement, handling and stocking of the goods.

The complete list of machinery and components with remarks and their conditions is detailed below.

A.2.3 Present condition of the equipment

A.2.3.1 Equipment in good condi[illegible] previous repairs and extra maintenance interventions

- n. 8 fermentation vats in chestnut wood, 30 hl each: 60% can be recovered;
- n. 21 fermentation vats in chestnut wood, 60 hl each: 60% can be recovered;
- n. 4 cement basins, 100 hl each: to be restored (1) ;
- n. 16 cement basins, 200 hl each: to be restored (1) ;
- n. 11 cement basins, 400 hl each: to be restored (1) ;
- n. 1 piston pump ("Manzini"), capacity 50hl/h, in good condition;
- n. 1 piston pump ("Manzini"), capacity 220hl/h, in good condition;
- n. 4 piston pumps("Manzini"), capacity 500hl/h, in good condition;
- n. 3 piston pumps("Manzini"), capacity 300hl/h, new;
- n. 2 centrifugal pumps, capacity 50 hl/h, in good condition;
- n. 1 plate filter ("Gianazza"), capacity 40 hl/h, in good condition;
- n. 1 plate filter, in stainless steel ("Gianazza"), capacity 60 hl/h, new;
- n. 1 diatomaceus filter, in stainless steel, capacity 70 hl/h , new;
- n. 1 filter "Enoverto", in stainless steel, capacity 120 hl/h , new;
- n. 3 glass fibre wool reservoirs, cap. 30 hl/h, in good condition;
- n. 2 glass fibre wool reservoirs, cap. 50 hl/h each, in good condition;

---

(1) Through a complete remaking of the internal coating and painting with epossidic varnish and the replacement of valves and doors.

- n. 1 blender in stainless steel ("Padovan"), capacity 10 hl/h, in good condition;
- n. 1 macerating bottle washing machine, 10 ranks ("Bodini"), in good condition;
- n. 2 rotating washing machines a 180 places, by hand, to be re - paired;
- n. 1 filling machine, 32 siphons, in stainless steel, new;
- n. 1 gravity filling machine, at 12 siphons ("A.E.I."), in good condition;
- n.1-4 -head corking machine, new;
- n. 1 mirror reflector for bottle control, new;
- n. 1 plate pasteurizator, capacity 50 hl, new;
- n. 1 labelling machine, 4,000 pieces/hour, new;
- n. 1 stainless steel conveyor belt, new;
- n. 1 semi-automatic corking machine, for sparkling wines, in plastic, new;
- n. 1 wire encaging machine (for corks) in plastic, for spark - ling wines, new;
- n. 1 linear filling machine, with 6 siphons, in stainless steel , for sparkling wines, new;
- n. 4 roles of plastic pipe, Ø 50 mm, 50 m each, new;
- n. 2 roles of plastic pipe, Ø 40 mm, 50 m each, new;
- n. 1 thermic power unit, cal. 250,000, new;
- n. 1 laboratory for analyses (to be integrated and up-dated).

A.2.3.2 Equipment in bad condition or out of order

- n. 1 pressing-disteming machine, in iron: constructed in the thir ties;
- n. 1 wine drawing machine, sieve type, in iron: completely out of order;
- n. 1 continuous pressing machine ("Milani"), 2 propellers, in i - ron: constructed in the thirties;
- n. 1 continuous pressing machine ("Melandri"), cap. 20 quintals / hour, in iron: constructed in the thirties;

- n. 1 plate filter ("Gianazza"), in bakelite: out of order;
- n. 2 filters ("A.E.I."): out of order;
- n. 1 pump ("Manzini"), cap. 150 quintals/h, in bronze; out of order;
- n. 1 centrifugal pump ("Alfa-Laval"), cap. 60 hl/h: out of order;
- n. 1 iron reservoir ("Gianazza"), cap. 30 hl: out of order;
- n. 4 iron insulated reservoirs ("Gianazza"), cap. 50 hl each;
- n. 3 iron reservoirs ("Gianazza"), cap. 90 hl each: out of order;
- n. 4 iron insulated reservoirs ("Gianazza"), cap. 90 hl each: out of order;
- n. 1 ammonia refrigerator ("Rossetto"), 15,000 fr: out of order;
- n. 1 iron corking machine ("Ronchi"): out of order;
- n. 1 gravity filling machine, in iron: out of order;
- n. 3 1-head corking machines ("Bertolazzo"), out of order;
- n. 3 gravity filling machines, with 12 siphons: out of order;
- n. 1 saturating column ("A.E.I."), cap. 50 hl: in bad condition;
- n. 1 inclined conveyor, in iron and rubber: in bad condition;
- n. 1 iron pressure vat, cap. 10 hl: out of order;
- n. 1 iron pressure vat ("Gianazza"), cap. 20 hl: out of order;
- n. 2 iron pressure vats ("Gianazza"), cap. 30 hl each: out of order;
- n. 1 iron pressure vat ("Gianazza"), cap. 50 hl: out of order;
- n. 1 iron pressure vat ("Gianazza"), cap. 50 hl : to be insulated.

A.2.3.3 Total utilizable capacity of the containers

The total utilizable capacity of the containers is as follows:

- n. 29 fermentation vats, in chestnut wood:	1,500 hl
- n. 31 cement basins:	8,000 hl
- n. 5 glassfibre reservoirs:	190 hl
Total	9,690 hl

As stated previously, all cement vats must be restored : inside parts by "sand blasting" and coating with epossidic varnishes; valves and manholes to be replaced.

A.3 PRESENT SITUATION OF SITE, BUILDINGS, SERVICES AND UTILITIES

A.3.1 Site and buildings

The original main building was erected in 1960; additional buildings are more recent. New offices have been now completed through the erection of a new floor in the main building. Available area: about 6,000 sq. m, crossed by a road (of around 1,000 sq. m) with passage right away for a macaroni factory, etc.

The area is bordered on the east by a stream, in the north by the macaroni factory and south (entrance to the winery) by the road to the old airport, and west by private properties.

Breakdown of the buildings (in sq. m covered area):

- main building	
. basement	1,300
. first floor	1,300
. second floor	260
	2,860
- new raw material warehouse	350
- old raw material warehouse	180
- spare parts store	100
- station	30
- cellar	380
- garage	380
Total	4,280

A project is under approval for the construction of a finished products warehouse (about 500 sq. m).

A.3.1.1 Construction characteristics

- Main building:
  . main structure wholly in reinforced concrete (pillars, beams , slabs) and very well constructed;
  . masonry with-concrete blocks;
  . cement plaster;
  . floors and walls (height m. 1.70) in grès, in the processing area and in enamel painted in other sections;
  . fixtures, mainly in painted iron.

- New raw material warehouse:
  . walls in concrete blocks;
  . trusses and roofing frames in galvanized iron;
  . roofing in galvanized sheet;
  . cement plaster
  . floor in cement;
  . fixtures in painted iron.

- Old raw material warehouse:
  . walls in blocks without plaster on three sides and in one side in galvanized sheet;
  . wooden roofing beams;
  . roof in galvanized sheet;
  . floor in cement;

- Spare parts store and station:
  . see previous item.

- Cellars and garage:
  . main structure in reinforced concrete;
  . walls in hollow blocks;
  . cement plaster;
  . floors in cement;
  . fixtures in wood or painted iron.

A.3.1.2 Present condition

Building needs heavy maintenance (see proposal in the main text).

A.3.2 Services and utilities

- Electric power: supplied by EELPA, without limits, by a transformer-box, tension volts 380/220. The whole distribution network does not meet modern operational and safety requirements.
- Water: supplied by the Municipal system but not sufficient. An increase in water delivery capacity is in hand: meanwhile, water supply is supplemented from a well and, in some cases, by a tank.
- Sewerage system: drainage into the nearly stream, previous sedimentation of the solid materials in a sediment tank which is periodically empted by the municipality.
- External areas: some constraints on available areas, and their utilization.

Also these services require some interventions: see proposals.

Plans

1) Layout
2) Basement Floor Plan
3) Ground Floor Plan
4) Longitudinal Section

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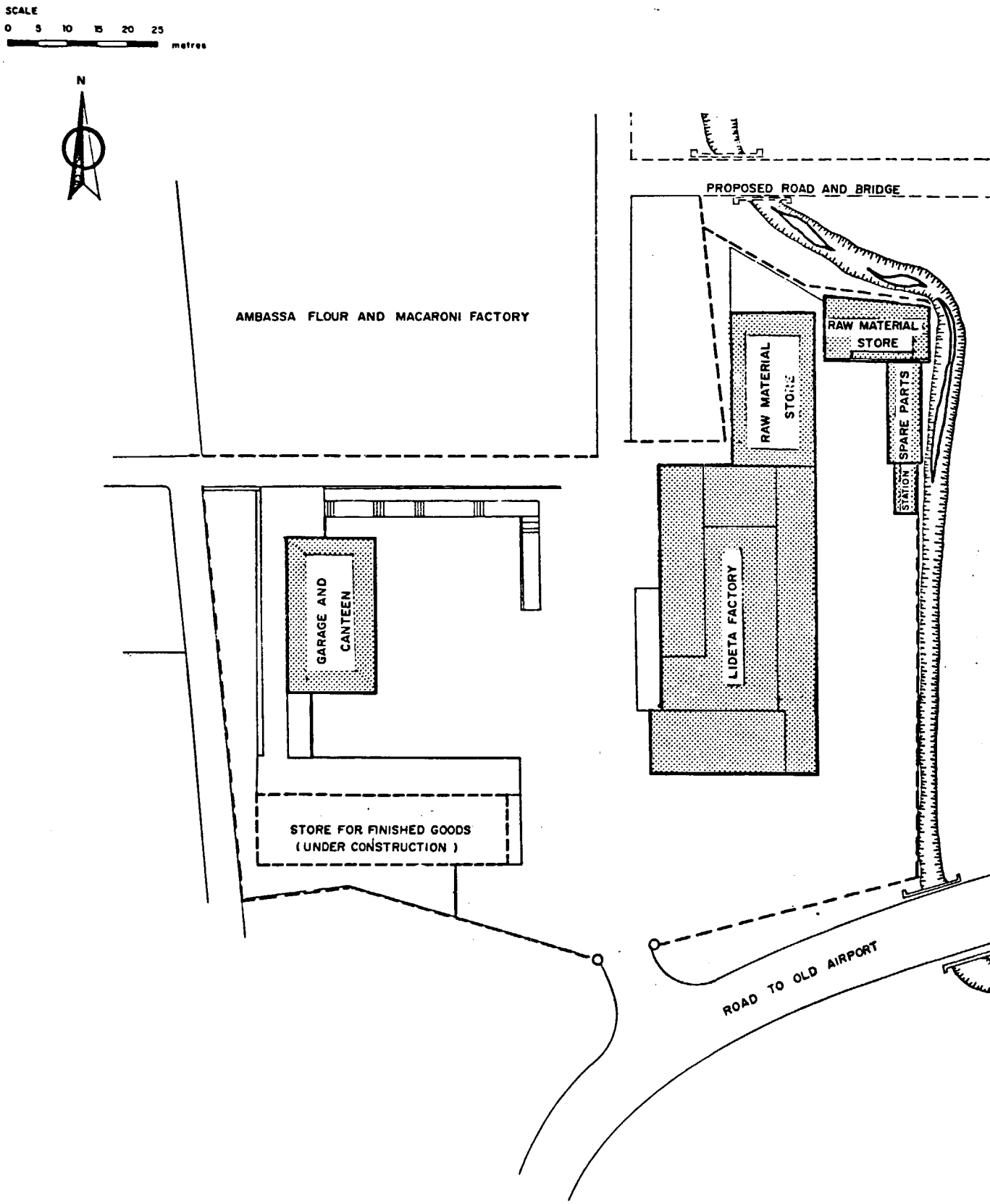
A.1

AWASH LIDETA BRANCH

LAYOUT



AWASH LIDETA BRANCH

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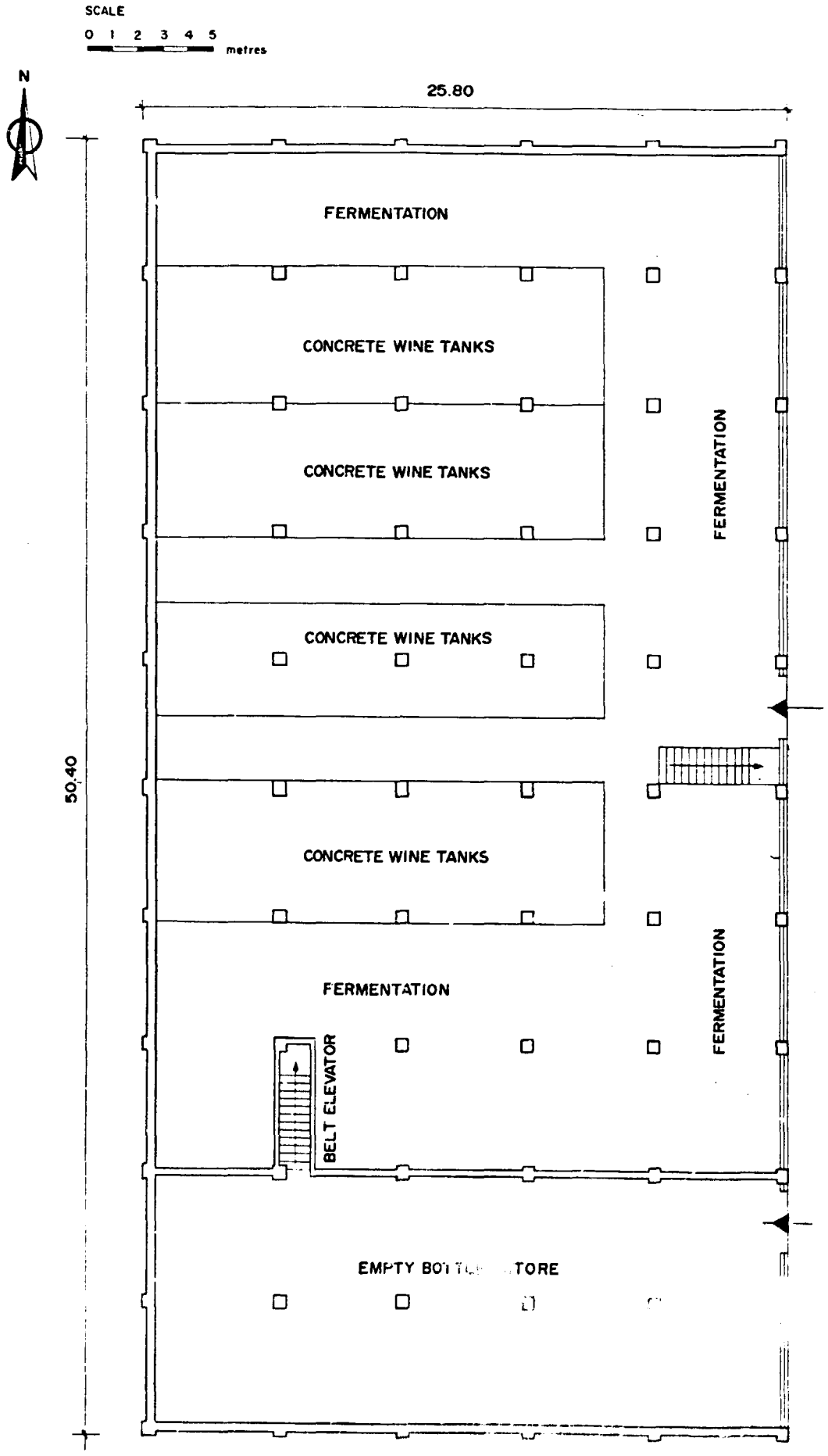
A.2

BASEMENT FLOOR PLAN

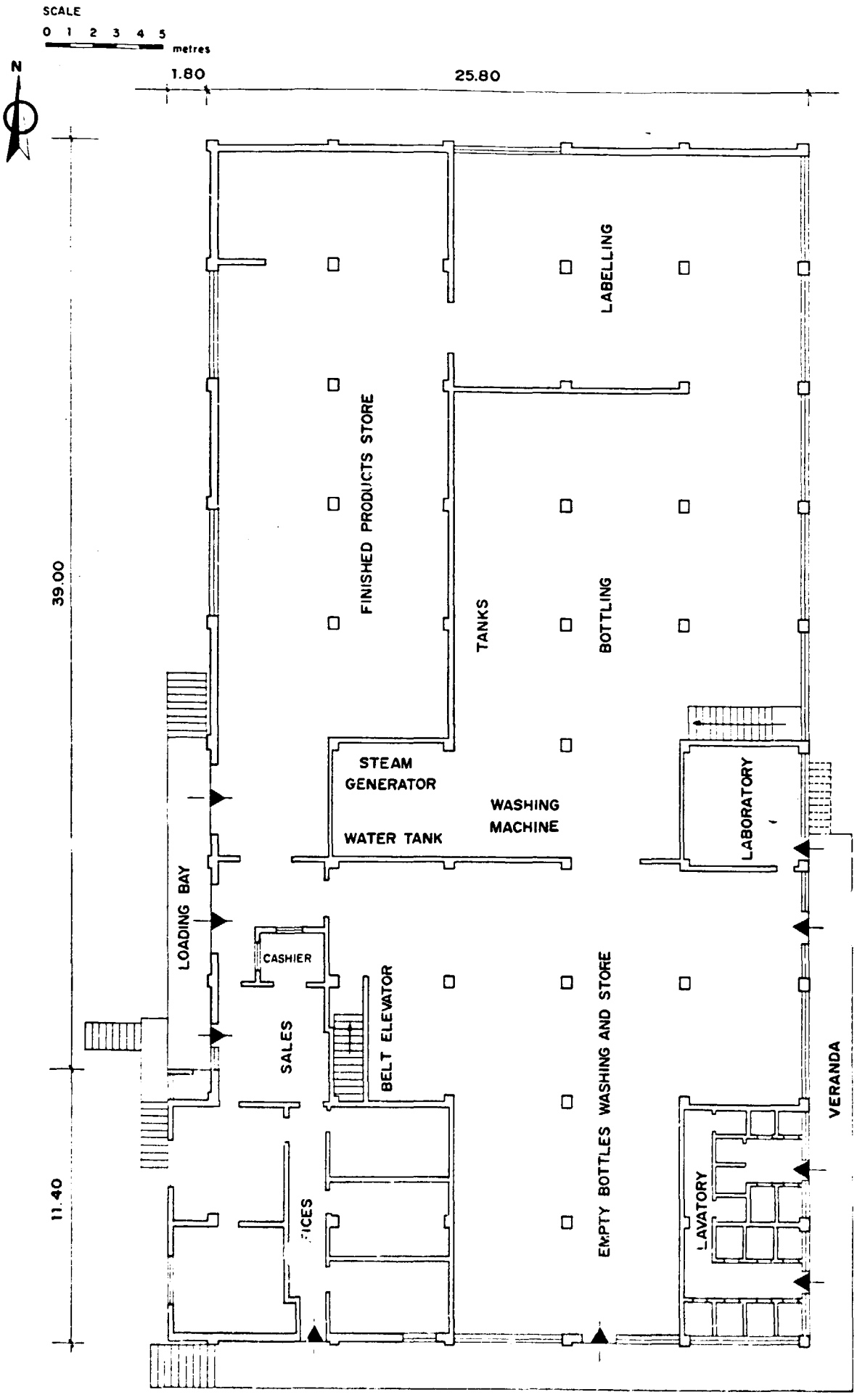


AWASH LIDETA BRANCH

AL/19/20

A.3

GROUND FLOOR PLAN



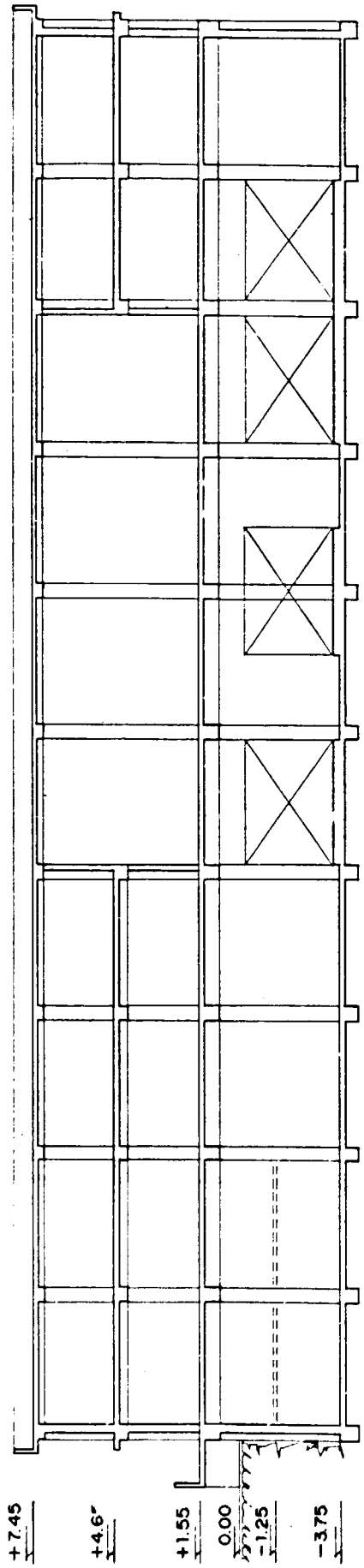
AWASH LIDETA BRANCH

A 4/21/22

A.4

LONGITUDINAL SECTION

SCALE
0 1 2 3 4 5
metres



B. AWASH MAKANISSA BRANCH

B.1 GENERAL INFORMATION

Location: Addis Ababa.
Administration: State firm, depending from the Ethiopian Beverage Corporation (E.B.C.), a division of the Ministry of Industry.
Object: production and bottling of wines (principal), vinegar, vermouth, sparkling wine, liqueurs and soft drinks.
Personnel: 149, with a total cost of 268 million Birr (September 1985).
Wine production (1984/85): 1,2 million litres (90% red, 10% white).
Main inputs and origin (1984/85):
- fresh grape: 706 quintals, from Ethiopian vineyards;
- dry raisin: 504 quintals, imported mainly from Turkey;
- sugar: 1,968 quintals, from Ethiopian Sugar Estates;
- other auxiliary products (tartaric and citric acid, biammonical phosphate, sodium benzoate, etc.): about 25 quintals, imported from various countries.

Bottles: supplied by a local glass factory.
Cork: imported from Spain and Portugal.
Market: see Awash Lideta Branch. Exports are carried out through this latter winery, even if a certain quantity of wine is transferred from Makanissa to Lideta Branch.

B.2 PRODUCTIVE CYCLE AND PRESENT SITUATION OF THE EQUIPMENT

B.2.1 Processing cycle

Roughly similar to that of Awash Lideta Branch, with some exceptions due to the lower efficiency or lack of suitable equipment.

Cold stabilization is rarely applied due to refrigeration problems. Bottling is completely carried out by hand.

Many containers are in bad condition or out of order (see 2.3). The laboratory for analyses lacks equipment.

B.2.2 Constraints

The constraints for this winery totally depend on the bad condition of the plant and equipment, most of which cannot be maintained due to their age and therefcre the unavailability of original spare parts.

Whith this situation the factory is compelled to carry out almost all operations manually. The hygienic situation is of a low standard.

A list of machinery and equipment and remarks on their present condition is detailed below.

B.2.3 Present condition of the equipment

B.2.3.1 Equipment which can be recovered by repair and/or extra-ordinary interventions

- n. 6 vertical fermentation vats in chestnut wood, capacity of 100 hl each;
- n. 50 barrels in chestnut wood for fermentation and aging, with total capacity of 2,000 hl: only 2/3 could be repaired by a qualified cooper;
- n. 3 vats in stainless steel, cap. 10 hl each;
- n. 1 piston pump ("Manzini"), 60 mm, cap. 220 hl/h, aged 3 years;
- n.1 piston pump ("Manzini"), 60 mm, cap. 220 hl/h, aged 10 years;
- n. 1 filter ("Gianazza") in stainless steel, cap. 50 hl/h: new;
- n. 1 reservoir in stainless steel, for liqueur bottling;
- n. 2 rotating washing machines ("Bodini"), 180 places, for liqueur bottling: in good condition;
- n. 2 corking machines ("Bertolazzo"), for cork, old model;
- n. 2 filling machines ("Bodini"), 8 siphons;
- n.1 laboratory for analyses: to be integrated and up-dated.

B.2.3.2 Equipment in bad condition or out of order

- n. 1 small pressing-disteming machine ("A.E.I."), in iron;
- n. 1 piston pump ("Ambrosi"), in bronze, cap. 150 hl/h;
- n. 1 continuous pressing machine ("Melandri"), with two iron propellers, cap. 15 ql/h;
- n. 2 reservoirs, in iron ("Gianazza"), cap. 30 hl each;
- n. 4 reservoirs, in iron ("Gianazza"), cap. 50 hl each;
- n. 2 reservoirs, in iron ("Gianazza"), cap. 70 hl each;
- n. 1 glycole refrigerator, in iron ("Gianazza"), cap. 3 hl: scrap;
- n. 1 ammonia refrigerator ("Gianazza"), 5,000 frig;
- n. 1 plate filter (" Rossetto"), cap. 30 hl/h;
- n. 1 filter ("A.E.I"), cap. 20 hl/h;
- n. 3 macerating units, in iron boxes: out of order;
- n. 1 macero-washing machine ("Da Ponte"), at 10 ranks: out of order;
- n. 1 rotating labeling machine: scrap;
- n.1 agitator for blending: scrap;
- n. 1 thermic power unit : out of order.

Note: in the old distillery processing area, the equipment and materials are considered as scrap.

B.2.3.3 Total utilizable capacity of the containers

Is the following:

- n. 6 fermentation vats, in chestnut wood	600 hl
- n.32 fermentation and aging wooden barrels	1,280 hl
- n. 3 stainless steel vats	30 hl
Total	1,910 hl

B.3 PRESENT SITUATION OF SITE, BUILDINGS, SERVICES AND UTILITIES

B.3.1 Site and buildings

The oldest building dates back to 1918. The last integrations and renovations ware carried out in 1957. The factory was formerly a distillery, then transformed into a warehouse, then a liqueuer plant and, lastly, into the present winery.

The total area is about 10,000 sq. m. on a sloping ground in a north-south direction. It borders on the east by the Makanissa Road (entrance to the factory), at south on the old distillery, on the west and north by other properties.

The building is a single compound of 8 parallel sheds (out of which 7 utilized by the winery), with a covered area of 3,750 sq. m. Area and buildings are leased from the Ministry of Housing.

B.3.1.1 Construction characteristics

- Main structure in masonry, stones and bricks (thickness 45-50 cm) with cement plaster;
- part of walls in raw cement plaster;
- roof trusses in wood;
- roof covering in galvanized sheet, with skylights in corrugated plastic;
- floors in crushed cement;
- fixtures in painted iron or wood.

B.3.1.2 Present condition

Buildings and external areas need a total restructuration , but within the framework of the final proposals of the whole wine sector.

B.3.2 Services and utilities

Electric power : supplied by EELPA, without limits, tension V 380/220. The whole distribution network is not in keeping with modern operational and safety standards.
Water : supplied by the Municipal Aqueduct; it is not sufficient, therefore, the supply is supplemented by a deep well. Water sources and distribution network do not meet the quantitative and operational requirements.
Sewerage system : needs to be revised (see proposals).
External areas : some constraints on available spaces and their arrangement.

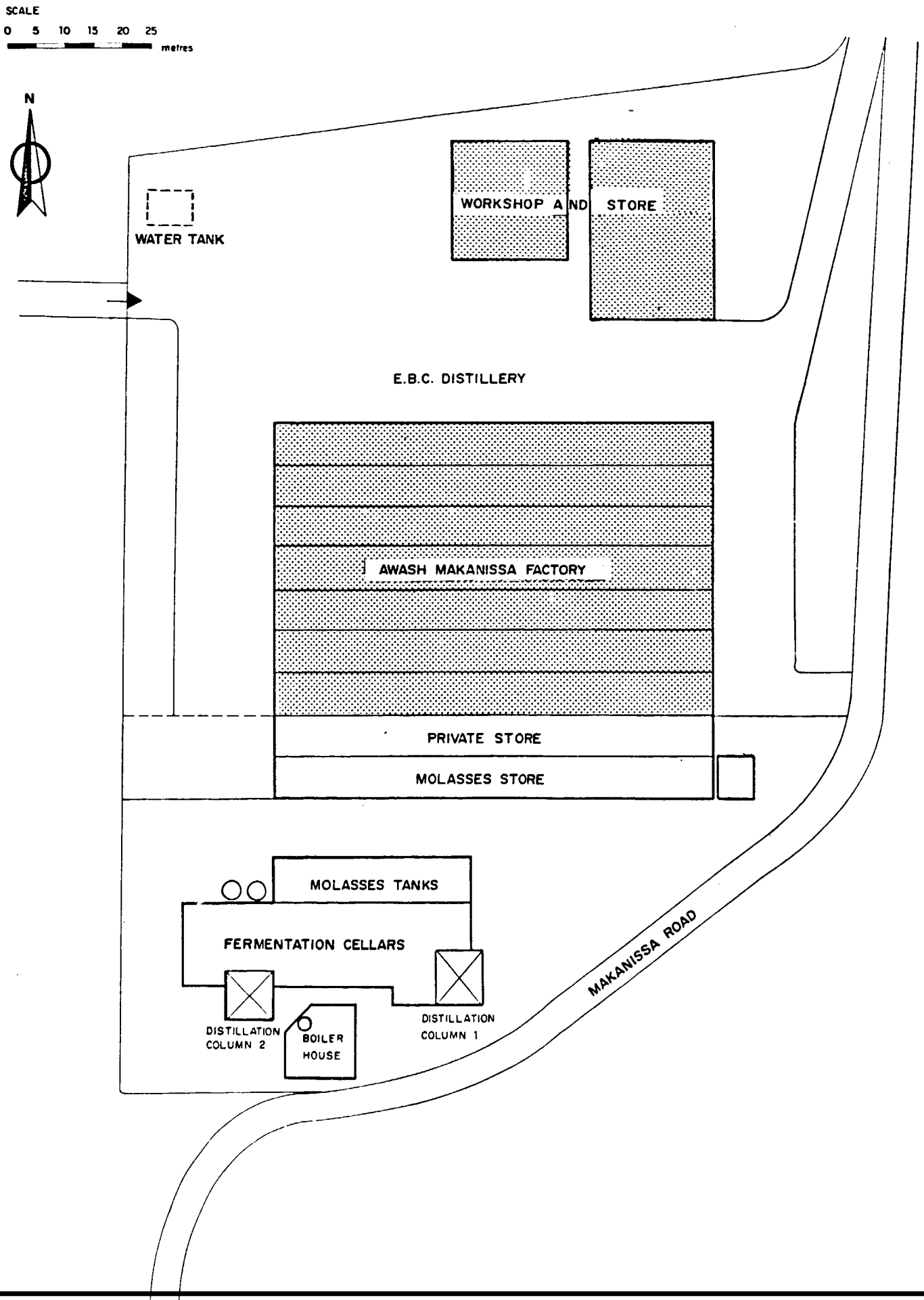
Plans

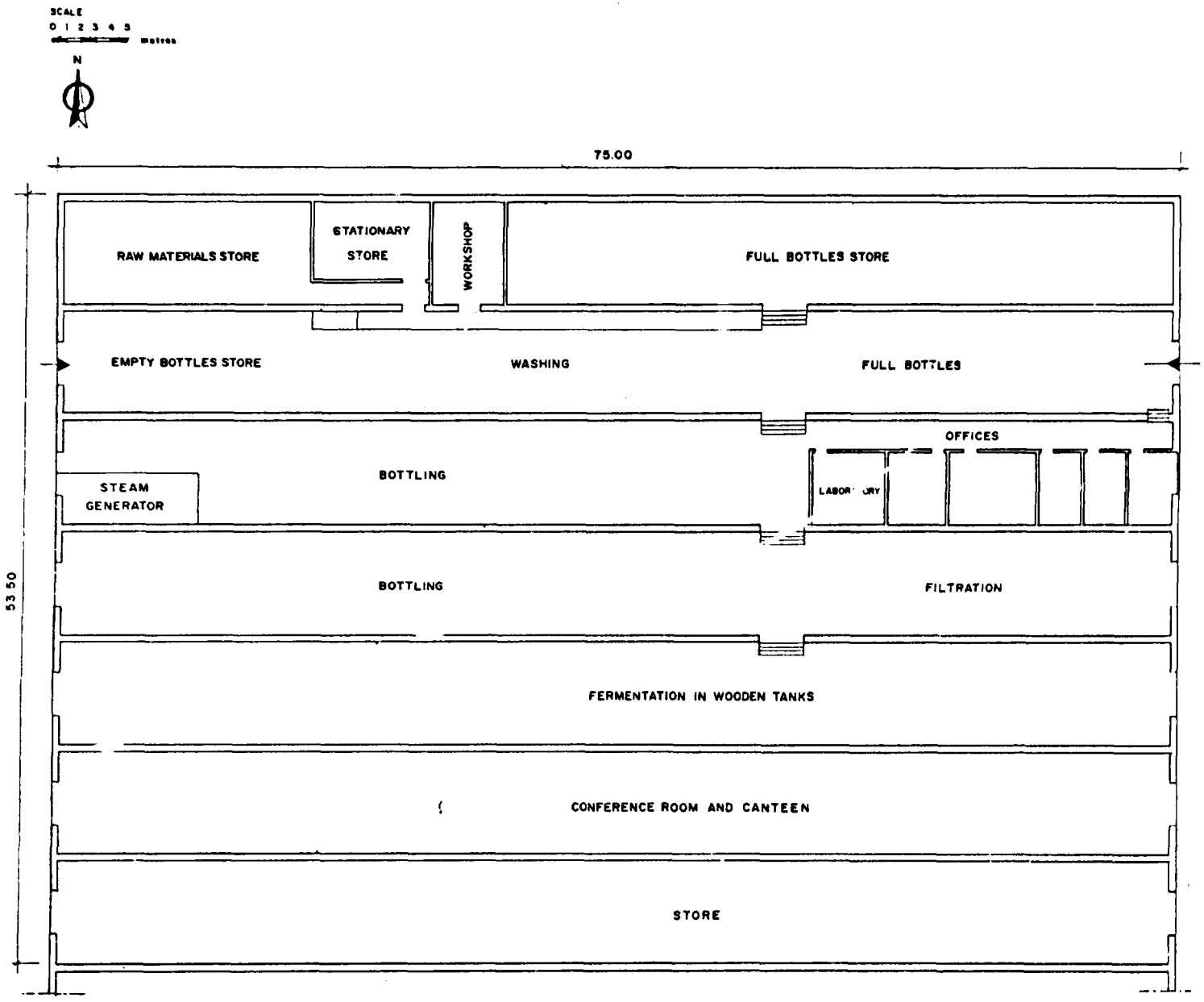
1) Layout
2) Plan

AWASH MAKANISSA BRANCH

LAYOUT H 6 / 29/30

B.1





AWASH MAKANISSA WINERY

PLAN

AL/31/32

B.2

C. ADDIS KETEMA BRANCH

C.1 GENERAL INFORMATION

Location : Addis Ababa.
Administration : State firm, depending from the Ethiopian Beverage Corporation (E.B.C.), a division of the Ministry of Industry.
Object : production and bottling of wine.
Personnel : 203, with a total cost of 376 million Birr (September 1985).
Wine production (1984/1985) : about 2,2 million litres (90% red, 10% white), with a total value of around 5,0 million Birr.
Main inputs and origin (1984/85) :
- fresh grape : 886q, from Ethiopian vineyards;
- dry raisin : 838 q, imported mainly from Turkey;
- sugar: 4,263 q, from Ethiopian Sugar Estates;
- other auxiliary products (tartaric and citric acid, biammonical phosphate, sodium benzoate, etc.): about 40 q, imported from various countries.

Bottles: supplied by a local glass factory.
Cork : imported from Spain and Portugal.
Market : see Awash Lideta Branch.

C.2 PRODUCTIVE CYCLE AND PRESENT CONDITION OF THE EQUIPMENT

C.2.1 Processing cycle

Similar to that of the two other wineries.

All machines, equipment and containers are in poor condi - tion, out of order or not utilized.

Bottling (10,000 pieces per day) is carried out by hand with very simple equipment.

A new automatic macero-washing machine with hot bath and 10 ranks (capacity 3,500-4,000 pieces/hour) has been recently in stalled but is not yet operational. Refrigeration is not carried out as the equipment concerned is out of order.

The plant operation is made possible only through a con - tinuous and costly (but not completely effective) maintenance of all equipment.

The factory is equipped with a modest laboratory for normal analyses.

The hygienic situation is precarious.

C.2.2 Constraints

The same reported for Awash Makanissa Branch.

A list of machines and equipment with critical remarks on their present condition is noted below.

C.2.3 Present condition of the equipment

C.2.3.1 Equipment which can be utilized after extensive and costly repair

- n. 1 old model wine-drawing installation for the separation of grape from must;
- n. 27 vertical fermentation barrels in chestnut wood, cap. 30 hl each, not covered; 70% can be recovered;
- n. 1 glassfibre reservoir, cap. 10 hl: in good condition;
- n. 1 glassfibre reservoir,cap. 50 hl: in good condition;
- n. 18 cement vats, cap. 140 hl each: to be restored;
- n. 2 piston pumps ("Manzini"), cap. 220 hl/h each: in good condition;
- n. 1 piston pump ("Manzini"), cap. 150 hl/h: in good condition;
- n. 1 piston pump ("Manzini"), cap. 50 hl/h: in good condition;
- n. 1 piston pump ("A.E.I."), cap. 150 hl/h: in good condition;
- n. 1 centrifugal pump ("Manzini"), cap. 30 hl/h: in good condition;
- n. 1 diatomaceous filter, in stainless steel ("Gianazza"), cap. 50 hl/h: in good condition;
- n. 1 stainless steel mixer ("Padovan"), cap. 10 hl/h;
- n. 1 macero-washing machine ("Bodini"), with 10 ranks: new;
- n. 1 rotating gravity filling machine, with 12 siphons, in stainless steel: in good condition;
- n. 1 motor corking machine, for crown corks ("Bertolazzo"): in good condition;
- n. 1 laboratory for analyses: to be integrated and up-dated;
- general office equipment: in good condition.

C.2.3.2 Equipment in bad condition or out of order

- n. 6 reservoirs, in iron, cap. 10 hl each: out of order;
- n. 1 reservoir, in iron ("Gianazza"), cap. 10 hl: in bad condition;
- n. 3 insulated reservoirs, in iron ("Gianazza"), cap. 50 hl each: out of order;
- n. 1 reservoir, in iron ("Gianazza"), cap. 50 hl: out of order;
- n. 4 reservoirs, in enamelled iron ("Gianazza"), cap. 200 hl each:out of order;
- n. 14 fermentation barrels in chestnut wood, cap. 10 hl each: in bad condition;
- n. 1 continuous pressing machine, in iron ("Melandri"): in bad condition;
- n. 1 filter ("A.E.I."), cap. 30 hl/h: out of order;
- n. 1 plate filter ("Gianazza"), cap. 10 hl/h: out of order;
- n. 1 compressor ("Leonardo da Vinci"): out of order;
- n. 3 piston pumps ("Manzini"): out of order;
- n. 1 cork engaging machine, hand operated: out of order;
- n. 2 rotating washing machines, 180 places: in bad condition;
- n. 2 gravity filling machine ("A.E.I."): out of order;
- n. 1 gas infusion machine: out of order;

All piping must be replaced.

C.2.3.3 Total utilizable capacity of the containers

Containers total capacity is as follows:

- n. 19 fermentation vats in chestnut wood	570 hl
- n. 18 cement vats	2,520 hl
- n. 2 glassfibre reservoirs	60 hl
Total	3,150 hl

C.3 PRESENT SITUATION OF SITE, BUILDINGS, SERVICES AND UTILITIES

C.3.1 Site and buildings

In 1961 a first building was erected for an hydromel factory (Tej). Part of it was transformed into the existing winery, and the main part is utilized for bottling Pepsi-Cola.

Certain building additions have been carried out. The total area is about 13,500 sq., with 5,500 sq. m. covered. The winery is about 3,000 sq. m. with 1,500 sq. m. covered. This area borders at north-east on the New Tekele Haimanat Road (entrance to the factory) and on the other sides by various properties. The production is carried out in one building.

C.3.1.1 Construction characteristics

- Supporting walls formed by pillars and cement blocks;
- roof rafters and trusses are made of galvanized steel;
- internal walls for offices and services in masonry; roofing in metallic structure, with counter-ceiling in light synthetic materials;
- roofing in galvanized sheet with skylights in corrugated plastic;
- internal walls in hollow cement blocks or bricks;
- floors in rendered cement;
- floor for raw material store in sandstone;
- floor in vat areas in sandstone; in the same areas walls are tiled (height 1.50 m);
- fixtures in iron or painted wood.

C.3.1.2 Present condition

Part of buildings need repair and renovation (see proposals).

C.3.2 Services and utilities

Electric power : supplied by EELPA, without limits, tension V 380/220. The whole distribution network is not in keeping with modern operational and safety standards.
Water : supplied by the Municipal Aqueduct. As the supply of water is not sufficient, a new reservoir of 45 cm.m, in addition to the existing one of 12 c.m, is under construction. The recourse to wells meets serious constraints, because of the characteristics of the underground water.
Severage system : to be fully restored.

Plans

1) Layout
2) Plan

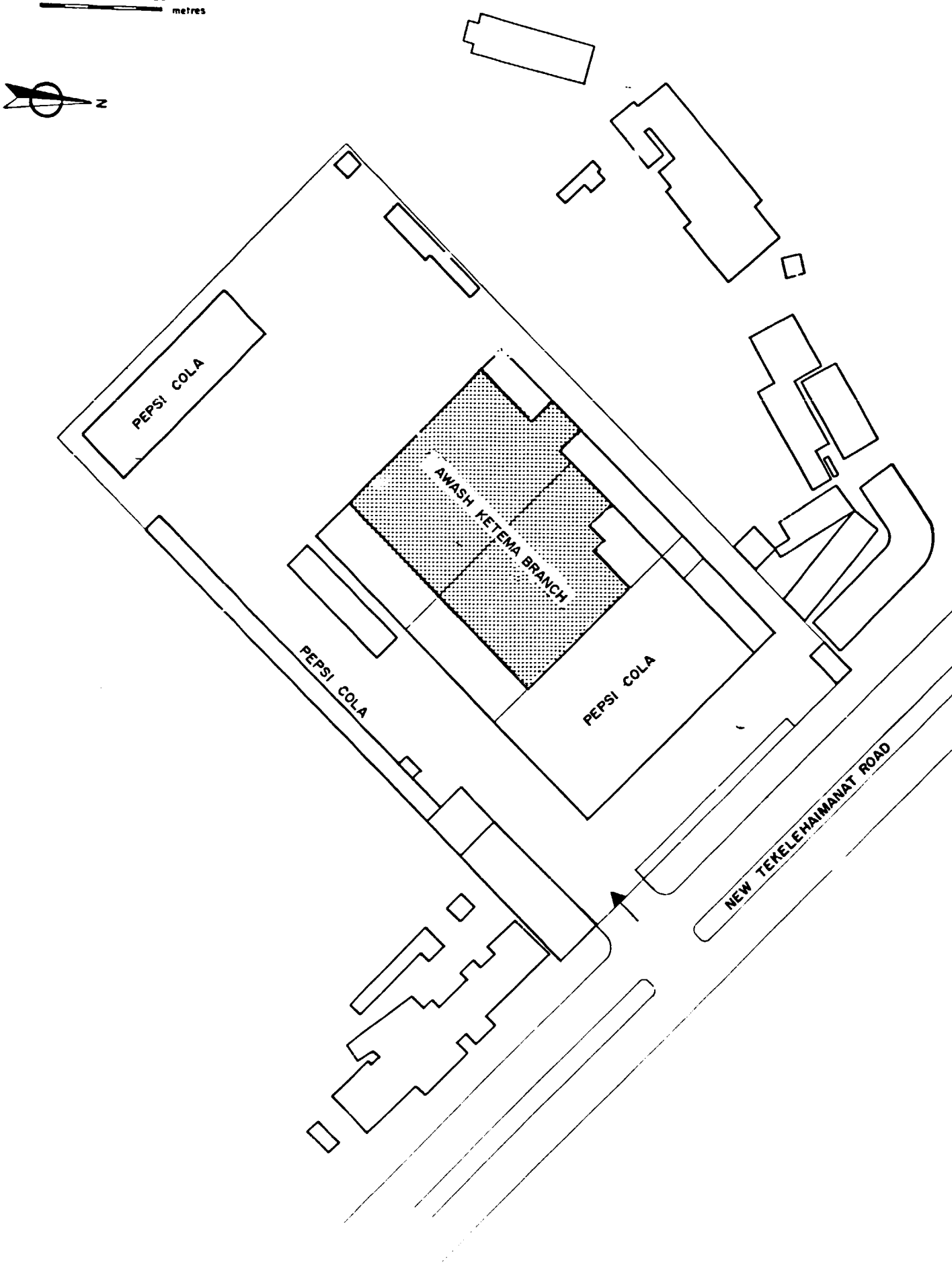
AWASH KETEMA BRANCH

LAYOUT

A. G/38[illegible]

C.1

SCALE
0 5 10 15 20 25
metres



AWASH KETEMA BRANCH

PLAN

A.4/41/42

C.2

SCALE
0 1 2 3 4 5
metres

5.50
4.20
19.50
10.20
4.50
38.50
8.50
CONCRETE WINE TANKS
PRESSING AND FILTRATION
PEPSI COLA
RAW MATERIALS STORE
CONCRETE WINE TANKS
FERMENTATION
PEPSI COLA
OFFICE
OFFICE
LABORATORY
PEPSI COLA
EMPTY BOTTLES STORE
BOTTLING
FINISHED PRODUCTS STORE
OFFICES
LOADING BAY
OFFICES
6.50
12.30
6.70
19.30
0.70

D. ASMARA WINE FACTORY, ASMARA

D.1 GENERAL INFORMATION

This factory operates in a region (Eritrea) too far and decentralized from Addis Ababa and its nearby markets, with serious transportation problems.

Location: Asmara.
Administration : State owned firm, depending from the Ethiopian Beverage Corporation (E.B.C.).
Object : production and bottling of wines (principal), sparkling wine, vermouth, vinegar syrups and liqueurs.
Personnel : 23
Wine production (1984/85) : about 600,000 litres (daily production: 2,000-2,500 bottles), for a total value of 1.3 million Birr (90% red, 10% white).
Main inputs and origin :
- dry raisin:about 270 q,imported;
- sugar:about 900 q,from Ethiopian Sugar Estates;
- other auxiliary products (tartaric and citric acid, biammonical phosphate, sodium benzoate, etc.): about 18 q, imported from various countries;

Bottles : supplied by an Ethiopian glass factory.
Cork : imported, mainly from Spain and Portugal.
Market : wine is almost totally sold in the regional market and Tigrai.

D.2 PRODUCTIVE CYCLE AND PRESENT SITUATION OF THE EQUIPMENT

D.2.1 Processing cycle

- Processing methodology for wine drawing from dry raisin : similar to that of the Addis Ababa wineries;
- pressing of pomace : carried out in vertical discontinuous pressing machines;
- cold-stabilization : not applied due to the lack of suitable equipment;
- clarification and filtration : made using old bag filters, in bad condition, causing a high oxidation of the wine;
- bottling : carried out by hand;

- corking: with very old equipment;
- bottle washing: by hand. No washing machine exists due to the absence of a warm water system.

No polishing filter exists in the cellar. There is a lit - tle air refrigerator used for the cooling of "must" when the temperatu- re is toc high.

There are neither isothermic vats not a refrigerator for the wine stabilization, nor a pasteurization unit.

D.2.2 Constraints

The main constraint is the lack of the equipment in all pro cessing, packaging, stocking and shipping stages. Moreover some of the existing equipment are in poor condition: another problem is represen - ted by the standard of maintenance, which is inadequate due especial - ly to the lack of spare parts.

A list of equipment with comments on its present condition is detailed below.

D.2.3 Present condition of the equipment

D.2.3.1 Equipment in good condition, previous repair and extra maintenance interventions

- n. 51 cement fermentation vats listed below: to be fully restored , coated and vitrified; valves and doors to be replaced;
  - . n. 2, cap. 9 hl each;
  - . n. 1, cap. 10 hl;
  - . n. 5, cap. 11.5 hl each;
  - . n. 14, cap. 12 hl each;
  - . n. 3, cap. 15 hl each;
  - . n. 10 cap. 17 hl each;
  - . n. 10, cap. 19 hl each;
  - . n. 3, cap. 21 hl each;
  - . n. 3, cap. 60 hl each.

- n. 16 fermentation barrels in chestnut wood, listed below: 60% recoverable, after proper repairs:
  . n. 3, cap. 2.75 hl each;
  . n. 4, cap. 7 hl each;
  . n. 1, cap. 11 hl;
  . n. 2, cap. 18 hl each;
  . n. 3, cap. 20 hl each;
  . n. 1, cap. 22 hl;
  . n. 1, cap. 23 hl;
  . n. 1, cap. 25 hl.
- n. 2 glass fibre reservoirs, cap. 50 hl each: in good condition;
- n. 6 glass fibre reservoirs, cap. 30 hl each: in good condition;
- n. 2 reservoirs, in stainless steel, cap. 11 hl each: in good condition;
- n. 2 piston pumps ("A.E.I."), cap. 50 hl/h: in good condition;
- n. 1 piston pumps, cap. 35 hl/h: in good condition;
- n. 2 centrifugal pumps, cap. 25 hl/h: in good condition;
- n. 1 glass column for treating sparkling wine, cap. 5 hl: in good condition;
- n. 1 linear filling machine, with 6 places: in good condition;
- n. 11 trucks of medium tonnage for wine transportation: in good condition;
- the following special equipment for liqueurs, all in good condition:
  . n. 1 linear filling machine, with 6 siphons;
  . n. 1 small saturation column;
  . n. 2 small corking machines;
  . n. 3 basin filling machines;
  . n. 1 reservoir, in stainless steel, cap. 10 hl.

D.2.3.2 Equipment in poor condition or out of order

- n. 9 small cement vats, for wine ageing:
- n. 4 vertical pressing machines, double track, in iron, hand operated;
- n. 2 continuous pressing machines ("A.E.I."), in iron, cap. 15 q. each: scrap ;
- n. 4 gravity bag filters ("A.E.I.");
- n. 1 refrigerator in iron ("Leonardo da Vinci"), cap. 750 litres;
- n. 1 plate filter ("Gianazza"), cap. 5 hl/h;
- n. 2 small basin filling machines, hand operated;
- n. 1 corking machine ("A.E.I."), in iron, for crown taps;
- n. 3 corking machines ("A.E.I."), in iron, for cork;

- n. 2 corking machines ("A.E.I."), in iron, for cork;
- n. 2 units for inserting gas: scrap ;
- n. 2 units for inserting gas, with 2 taps, for sparking wine.

D.2.3.3 Total utilizable capacity of the containers

As listed below:

- n. 51 fermentation cement basins	900	hl
- n. 10 fermentation wooden barrels	130	hl
- n. 8 glass fibre glass reservoirs	280	hl
- n. 2 reservoirs in stainless steel	22	hl
Total	1,332	hl

D.3 PRESENT SITUATION OF SITE, BUILDINGS, SERVICES AND UTILITIES

D.3.1 Site and buildings

The original building was erected in 1947, and converted in to the present winery in 1974. Additions have been made since that date. Original area of 2,617 sq.m. was later increased to the present 6,642 sq. m.

The factory area is about 1,130 sq. m.(ground floor for industrial operations, first floor for offices etc.).Other buildings: store for the empty containers (60 sq. m); conference hall (55 sq. m).

In the factory yard a warehouse for empty containers (about 170 sq. m) is being built.

D.3.1.1 Construction characteristics

- Supporting walls of the main building: in reinforced concrete , with cement blocks, cement rendered;
- wine drawing room: pillars in reinforced concrete; trusses and roof frames in wood; roofing in galvanized sheet; perimetral and partition walls in plastered blocks;
- floors in crushed cement on the groundfloor and in linoleum in the offices;
- fixtures: in iron or painted wood:
- wall of the processing area: enamol coated to a height of 1.50 m.

D.3.1.2 Present condition

In general good due to a correct maintenance. However, a partial renovation of the buildings is recommended (see proposals).

D.3.2 Services and utilities

Electric power: supplied by EELPA, tension V 220/120. The distribution network does not meet modern operational and safety requirements.

Water: supplied by the Municipal Aqueduct in sufficient quantity; there is a reservoir of 150 cu.m.

Sewerage system: water drained into the municipal network. A water purification plant is not foreseen.

Plans

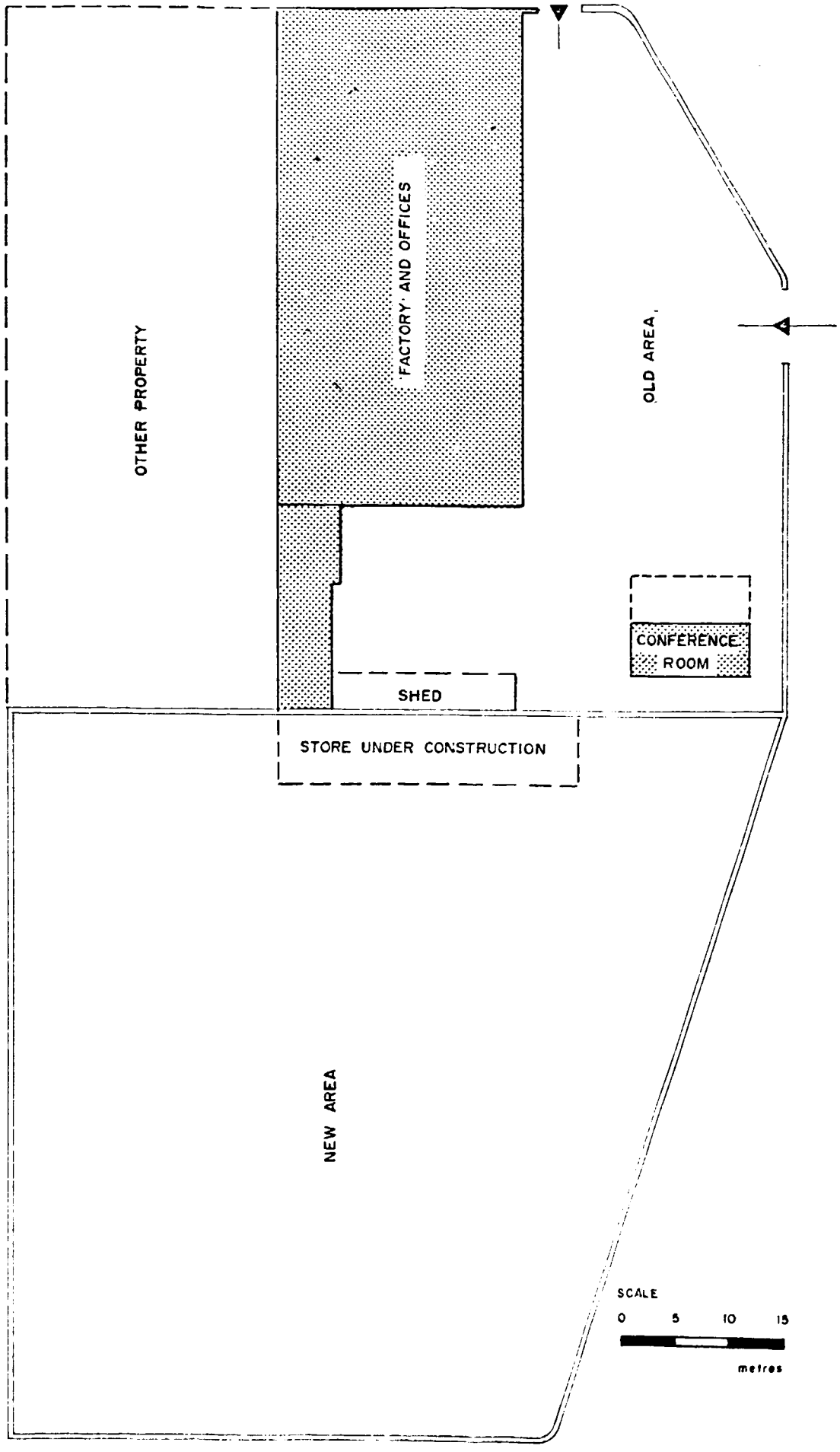
1) Layout
2) Plan

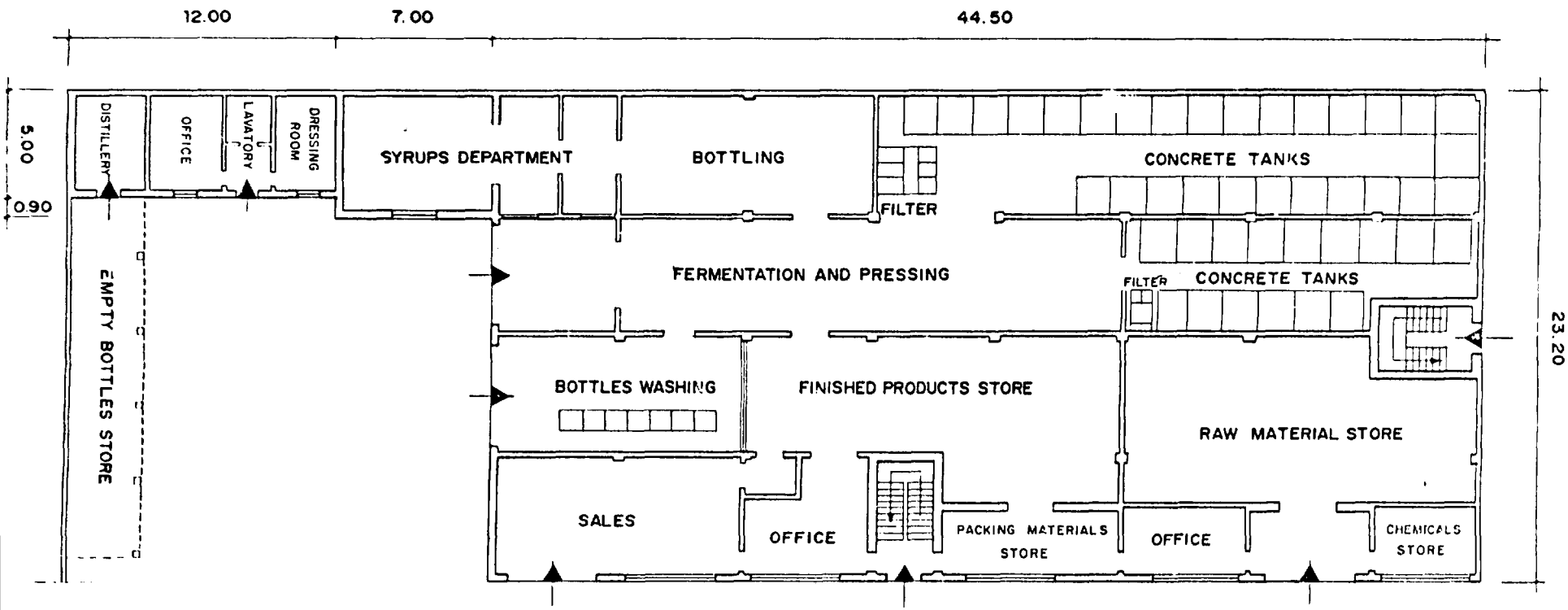
ASMARA WINE AND LIQUOR FACTORY

LAYOUT

A 6 / 69[illegible]

D.1





SCALE
0 1 2 3 4 5
metres

ASMARA WINE AND LIQUOR FACTORY

PLAN

AL / 51 / 52

D.2

A S/1/2.

ANNEX 5

- PRESENT SITUATION OF THE ETHIOPIAN VINEYARDS -

COMMENTS AND RECOMMENDATIONS ON THE CULTIVATION TECHNIQUES FOR THEIR FURTHER DEVELOPMENT

PRESENT SITUATION OF THE ETHIOPIAN VINEYARDS - COMMENTS AND RECOMMENDATIONS ON THE CULTIVATION TECHNIQUES FOR THEIR FURTHER DEVELOPMENT

The agronomist (and wine machinery expert) of the IFAGRARIA Team visited in September, with the kind assistance of the Horticulture Development Corporation (H.D.C.) and E.B.C., the vineyards in Ziwai and Dukam.

The expert carried out a survey of each vineyard and made a report on their present condition, advancing suggestions for their future development.

In particular he studied the soil characteristics and suitability, present plantation techniques, the pruning system, and related infrastructures.

The expert's findings are as follows:

1. ZIWAI VINEYARD

1.1 PRESENT SITUATION, CONSTRAINTS, RECOMMENDATIONS

This vineyard is located at 8 Km from the Ziwai village, which is connected to Addis Ababa by a good asphalt road (170 km). The access road to the wineyard is unpaved in good condition and passable by heavy and medium tonnage vehicles.

Total vineyard area is 92 hectares, out of which 46 are in full production, the vines are 6-7 years old: the remaining 46 ha have been recently planted and will start producing in 1986 and 1987.

Soils are suitable for vine cultivation: they are of a mid - dle mixture, slightly light, with a very deep fertile layer, and a rather high organic and pH content.

The vineyard, according to information supplied by the H.D.C, will be irrigated by means of a canal network, under construction. At present there is only the possibility to irrigate with the traditional surface irrigation system.

Climatic conditions are very favourable and at present two harvests are made per year (January, June), with a total grape yield of 35-40 q per ha - level which could be roughly doubled if proper *cultural techniques* were carried out.

In this connection the following considerations must be put in evidence:

a) Vine kind promiscuity

In the vineyard some different kinds of vines are planted, which are not compatible, due to different ripening and harvesting times, and therefore have negative effects on the quantity and quality of the gra - pe.

b) Pruning

Vine pruning is not carried out according to rational and modern techniques. Personnel are not qualified sufficiently and trained for this important work. The "Guyot" method should be utilised particularly for "dry pruning". Only shoots fruitifying with a number of buds rela - ted to the mother-plant strength (6-8 buds) must be retained, whereas all parastic shoots - developing only leaves and causing a high percentage of abortive fruits - must be cut.

This last phenomenon has been seen in large number of vines at "alberello", bearing a considerable quantity of buds, which would give good production results but for irrational pruning.

A dying off of the long shoots with 10-15-20 buds can reach 50-70%; therefore a mixed pruning Guyot type is suggested for long shoots with 6-8 fruit bearing buds, whereas on the short shoots only a 1-bud spur can be left.

All the unfruitful vegetation must be cut off during "dry" and "green" pruning (this last is not at present applied).

c) Other cultural works

Anticryptogamic treatments (especially against oidium and peronospora) are seldom carried out at the right time.

Surface irrigation is not made at the right time and volume and must be improved whilst waiting for the start up of the new irrigation scheme.

Many complementary - but important - works like disking, ploughing, harrowing, manuring, etc. are neglected. For example weeds often grow higher than the vines.

d) Birds

Birds are causing a high grape wastage (up to 30-40%). In order to eliminate or minimize this an ultra-sound device can be installed; the cost is relatively low and would be recovered by a higher harvest.

1.2 CONCLUSIONS

By improving cultivation techniques, in particular pruning, and minimizing bird damage, the output of this vineyard could almost double in one-two years. A further development of the production can be, of course, obtained by a progressive extension of the cultivated area, at any rate already planned by the H.D.C.

2. DUKAM VINEYARD

2.1 PRESENT SITUATION, CONSTRAINTS, RECOMMENDATIONS

The vineyard is located at about 120 km from Addis Ababa , and is linked by a good asphalt road. The area is 25 ha of vines of mixed kinds, causing the same problems as remarked for the Ziwai vineyard.

Vines are aged from 15 and 18 years. Yields are around 15-20 q/ha.

Soils are peaty mixed with clay, with a higher organic content. Also humidity is good.

Climate is favourable, with higher rains in respect to Zewai. However, there is only one harvest per year.

Vine productive conditions are good, visible from plants strength, shoots perfect lignification and the quantity of buds.

As regards this vineyard the constraints and recommendations are the same as observed for Zewai vineyard.

2.2 CONCLUSIONS

Due to soil and climate characteristic, this vineyard could produce for the next 10 years, and with higher yields, if cultural techniques were improved as previously suggested. Moreover, an extension of the cultivable area, always with favourable requirements, is possible.

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ANNEX 6

LIST OF THE EQUIPMENT REQUIRED FOR THE NEW PLANT, FOR THE RESTRUCTURATION OF THE EXISTING WINERIES AND FOR THE CREATION OF A FIRST CENTRE FOR MUST PREPARATION

A. NEW PLANT

B. AWASH LIDETA WINERY

C. AWASH MAKANISSA WINERY

D. ASMARA WINE FACTORY

E. LITTRE CENTRE FOR MUST PREPARATION

LIST OF THE EQUIPMENT REQUIRED FOR THE NEW PLANT, FOR THE RESTRUCTURATION OF THE EXISTING WINERIES AND FOR THE CREATION OF A FIRST CENTRE FOR MUST PREPARATION

Page

CONTENTS

Notes:

- Equipment are grouped by sector;
- Prices refer to each sector and are expressed in Italian Lire (Lit.) and in Birr on the basis of a rate of exchange of 1 US $ = 1,762 Italian Lire (average IV Quarter 1985) and 2.07 Birr (cross exchange 1 Birr = 851.50 Italian Lire);
- Prices are CIF-Assab (on board) and include assembling cost at the factories with suppliers' specialized personnel;
- "Final" costs are estimated in the main text: they include custon duties (if any) and taxes, landing and transit expenses and taxes, warehousing duties, inland transport, additional assembling cost (local labour), and contingencies (av. 10%);
- Spare parts for equipment and vehicles are not listed here. They will be determinated and evaluated during economic analysis;
- In the same occasion, a few additional equipment will be proposed as an integration of the wineries capital goods. It is the case of trucks, car, offices equipment and furniture.

A - NEW PLANT

FIRST MODULE

- CAPACITY OF FRESH GRAPE PROCESSING: 40,000 quintals
- CAPACITY OF TOTAL WINE PRODUCTION : 150,000 hl. from fresh grape and dry raisin
- BOTTLING CAPACITY: 8,000 litres/hour

PLANNED ENLARGEMENT (1)

- MODULAR INCREASE OF CONTAINERS' CAPACITY

---

(1) The equipment required for future enlargements will be listed and evaluated in the main text in strict relation to planned wine production.

RECEPTION OF GRAPES

1 WEIGHING INSTALLATION

Consisting of:

- weighbridge
- 14 x 3 m platform, capacity 60 ton
- dial-type automatic head
- terminal with visual indication display and rapid print out.

1 PROBE-TYPE SAMPLER

With articulated arm

1 REFRACTOMETER STATION

Automatic type, for measuring sugar-content of the musts.

OVERALL PRICE	LIT.	80,800,000.=
	Birr	84,890.=

WINE-MAKING LINES, IN RED AND WHITE

Working capacity: 200-250 ql/h

N.

1 **5 HP Flat car, tippable both sides**
- Length 6 x 3 m
- carying capacity: 200 cl
- equiped with hydraulic unit with electro-piloted distribution

2 **5.5 HP Screw conveyors**
- length 6 x 2.50 m
- equiped with reducers and safety guards
- designed for unloading from both sides
- all parts in contact with the liquid mass in stainless steel AISI 304

2 **7.5 HP Roller pressing-disteming crushers**
- Capacity: 250 ql each
- length 330 x 95 x 160 cm
- all parts in contact with the liquid mass in stainless steel

2 **Stalk extractors**
- Type AR 300, each complete with 12 HP engine
- PVC pipes; curved trestle

2 **8-10 HP Piston electropumps**
- 2-cylinder type, with all parts in contact etc. (see above)
- delivery capacity 450-600 hl/h, serving the two pressing-diste - ming machines

2 **Electric switchboards**
For control, command and synchronization of the series-connected machines

1 **6 HP Liter-counting piston pump**
For racking off, blending and controls
- delivery 200-400 ql/h

N.

2 **4 HP High-pressure pumps**
Suitable for cleaning vats and machines
. working pressure: 30 atm.

1 **6 HO Rotary conveyor with grilled double bottom**
Suitable for the pre-washing and cleaning of dry raisins before their delivery to the wine-making units
. containing capacity about 100 ql
. all parts in contact with the liquid mass in stainless steel

1 **1 HP Automatic matering unit for distribution of sulphur anhydri - de (dioxide)**
. Complete with two distribution assemblies

250m **100 Ø fixed piping**
For conveyance of crushed grape from the wine presses to the vinifi cation sector

100m **Mobile reeled piping**
For conveyance of crushed grapes, connected up to the 100 Ø fixed pipes

OVERALL PRICE LIT. 309,842,000.=

Birr 363,880.=

WINE-MAKING LINE, IN WHITE

N.

1 **5.5 HP Inclined separator**
For the first separating of the white grapes meant for wine-making, in white
- diameter: 640 mm Ø
- capacity: 250 ql/h
- all parts in contact with the liquid mass in 304 stainless steel

1 **15 HP Continuous pressing machine**
Suitable for the exhausting of the pomace coming from the above mentioned separator
- capacity: 640 t
- all parts (see separator)

1 **Centralized dial-type control panel**
For controlling the two separating-pressing machines
- equiped with air compressor and control unit for pomace exhausting pressure

2 **5.5-8 HP Double-piston pumps**
For conveyance of must produced from the exhausting line to the fermentation vats
- delivery: 500 hl/h

OVERALL PRICE LIT. 132,800,000

Birr 155,960

WINE-MAKING LINES, IN RED FOR FRESH AND DRIED GRAPES

Working capacity: 40,000 ql/year of fresh grapes; in addition 130,000 hl/year of wine from dry raisin

N.

20 **500-hl Press-separator-extractors**
- Made entirely in AISI 304 stainless steel;
- equiped with electric panels, timers, idletime programmers, booster units, pomace extraction screws, and 12-HP power units with speed reducers;
- height 10.20 m;
- diameter 3.00 cm
- height of discharge mouth 100 mm

4 **Spiral staircases**
Entirely in stainless steel
- height 11.50 m each

100m **Wine-press connecting gangways**
Entirely in stainless steel

1 **Racker-off for skins separation**

1 **Rotating-brush filter**
For coarse impurities

2 **5.5 HP Screw conveyors for pomace**
To be placed under the wine-presses
Each 20 m long, 1 m wide, 0.70 m high

2 **7.5 HP Screw elevators for pomace**
For conveyance to the final presses
- in stainless steel
- lenght: 5 m

N.

1 **Inclined separator**
Suitable for obtaining 50% pure must in the first passage to then discharge the plug for pressing in the continuous press
- diameter 800 mm
- capacity 400 ql
- wheel-mounted and adjustable legs, characteristics:
  - .. length 6,240 mm
  - .. width 1,150 mm
  - .. height 3,100 mm
  - .. power 7.5 HP
  - .. weight 5,500 kg
- all parts in contact with the liquid in stainless steel

1 **Continuous press**
For the extraction of 400 ql of fermented pomace
- capacity 800 t
- characteristics:
  - .. length 5,885 mm
  - .. width 1,300 mm
  - .. height 1,955 mm
  - .. weight 76 ql
  - .. power 20 HP
- all the parts in contact with the liquid are in AISI stainless steel

1 **Centralized control board for these machines**
For the above mentioned equipment
- equipped with all automatisms and compressor

1 **Screw conveyor for exhausted pomace**
For removing pomace from presses
- in stainless steel

12m **Belt for inclined screw conveyor**

4 **Transitable manhole convers**
For the four under-press
- vats (for crushed material collecting)

OVERALL PRICE LIT. 1,509,500,000
Birr 1,772,750

MUST TRANSFER

300m **Mobile reeled piping**
With relative fittings for transfer of musts
. supplied in various diameters

2 **8-10 HP Pumps**
For racking off
. capacity 600-700 hl
. all parts, etc.

1 **10-15 HP Pumps**
As described above, but suitable for large-scale tunning
. capacity 900-1,000 hl

2 **5.5-8 HP Pumps**
As described above,for the movement of the extraction-lines must
. capacity 500 hl

5 **Pumps**
As described above, suitable for secondary fermentations tunning
. capacity 500 hl

2 **3-4 HP Pumps**
As described above,for shreddings
. capacity 300 hl

4 **2.7-4 HP Pumps**
As described above, for topping up and draughts
. capacity 100-200 hl

1 **15 HP Rotary pump**
For transfer of dregs and dried grapes
. capacity 250 hl

1 **Set of fixed stainless steel and mobile pipes**
For secondary fermentation, equiped with fittings, bends, hangers , etc.

OVERALL PRICE	LIT.	310,850,000
	Birr	365,060

SECONDARY FERMENTATION

N.	
20	**1,500-HL stainless steel tanks (or vats)** . Diameter 5 m . total height 8.50 m
10	**2,500-HL stainless steel tanks** . Diameter 6.42 m . height 8.65 m
10	**300-HL stainless steel tanks** . Diameter 2.87 m . height 5.79 m
10	**250-HL stainless steel tanks** . Diameter 2.63 m . height 5.76 m
10	**150-HL stainless steel tanks** . Diameter 2.39 m . height 4.59 m
10	**100-HL stainless steel tanks** . Diameter 1.91 m . height 4.44 m
10	**50-HL stainless steel tanks** . Diameter 1.44 m . height 3.90 m
10	**25-HL stainless steel tanks** . Diameter 1.20 m . height 3.12 m
40m	**Stainless steel foot stairs**
400	**Stainless steel gangways** To serve external and internal tanks

N.

20m **Spiral staircases**
To serve external tanks

2 **Sugar dissolvers**
Wheel mounted,in stainless steel
. capacity 30 hl

2 **Agitators**
To be inserted in the tanks for wine correction

1 **Air and glycol must - chillers (refrigerators)**
For control of the musts

1 **Nitrogen distribution unit**
For shedding tanks

OVERALL PRICE LIT 2,042,130,000

Birr 2,398,270

MUST AND WINE FILTERING PLANT

N.

1 **Gigantic press filter**
Mod. 100 x 100, automatic, complete with fossil-flour feed unit

1 **Press filter**
40 x 40 - 40 plates, for filtration of dreg residues coming from the treatments

2 **Dry-type rougher filters**
Self-cleaning with automatic discharge
. capacity 300 hl each

2 **Stainless steel brillianting filters**
40 x 40 - 80 plates, trolley-mounted, snap closure, equiped with pumps

1 **Chemical products mixer**

OVERALL PRICE	LIT.	296,700,000.=
	Birr	348,440.=

CHILLING DEPARTMENT
(REFRIGERATION)

N.	
1	**Refrigeration unit** . Complete with 2 motors and compressors, motor-driven wine pump, racking off power unit, condenser . capacity 120,000 Fr/h
1	**Water-cooling tower** Including water-circulation pump, feed pipes
1	**Electric control panel** For refrigeration and tower unit
12	**250-HL heat-insulated stainless steel tanks** For wine stabilization
1	**Set of stainless steel connecting pipes**
1	**Automatic decalcinator/water-softener unit** . Capacity 30 cu.m/h
1	**Microfiltration plant** . Capacity 15,000 lt/h

OVERALL PRICE LIT. 582,051,000.=

Birr 683,560.=

HOT BOTTLING PLANT FOR SPARKLING NON "ENOSTERILE" WINES - CAPACITY 8,000 LT/H

N.	
1	**Heating plant** With two 1,200,000 kg/Cal boilers, complete with accessories for efficient operation
1	**Macerating-washing machines** Continuous flow, 18 rows
4	**250-HL stainless steel tanks** For drawing the wine into the filler
1	**Nitrogen distribution unit**
1	**100-HL saturator tower**
1	**80-HL three-stage plate-type pasteurizer** Complete with all accessories
1	**Automatic isobaric filler** With 50 filler taps
1	**Detector for extraneous bodies,** dirty or broken bottles, etc.
1	**Automatic corking machine (for corks)** With 8 tapping heads
1	**Crown-cap tapper** 8 tapping heads
1	**Missing corks detector**
1	**Automatic distributor of heat-retractable caps**
1	**Set of supplementary formats**

N.

1	**Set of supplementary archimedean screws**
1	**Tunnel for retracting caps and drying of bottle necks**
1	**Cap polisher** With 20 heads
1	**Labeller** Suitable for apply 3 pieces with 12 small plates
1	**Set of stainless steel connecting belts** And for bottle transport
1	**Set of angle stations, power units, accumulation platform, etc.**
1	**Roller platform for crate conveyance**
1	**Steam-raising plant - water plant - air plant at the bottling line**
1	**Automatic packaging machine for cardboard**
1	**Automatic carton taping machine** 1,000-1,200 boxes per hour
1	**Centralized electric switchboard** For control and protection of motors installed on the machines

OVERALL PRICE LIT. 1,247,120,000.=

Birr 1,464,620.=

MISCELLANEOUS PLANTS

N.	
1	**Set of flues, electricity-driven suction fans** For carbon and sulphur dioxides. Air conditioners for the office
1	**Set of supplementary equipment**
1	**Conveyor belt** For transportation of containers
2	**1,000-LT air compressors** With 3 motors
1	**Electrically-driven pallet carries ("electric mule")** With recharging station . Capacity 2.000 kg
1	**Diesel-driven pallet carrier** . Capacity 2,500 kg . lifting height 5.60 m
4	**Manually-drawn hydraulic trolleys**
-	**Analytical laboratory equipment**
1	**Water supply system** Outside and inside the winery, well and lifting equipment
1	**2,000-HL stand-by water tanks** Complete with 30-hl, 6-atm surge tank - with two pumps
1	**Chlorination plant** For disinfecting water
1	**Fire-fighting plant**
1	**Telephone plant**
-	**Workshop equipment**

N.

1 **Electric installation**
Complete with power cables, lighting cables, sockets, lamps, outside poles, etc. (installed in place)

\- **Office equipment**
(desks, shelving, type writers, accountacy computer, photocopying set, etc.)

1,000 **Seasoned-timber four-way pallets**
. Dimensions: 1,000 x 1,200

OVERALL PRICE LIT. 802,700,000.=

Birr 942,690.= (1)

---

(1) Of which: Birr - 728,130 for equipment
- 98,300 for internal vehicles
- 116,260 for office equipment, other non-technical equipment and furniture

SECONDARY FERMENTATION

N.

10 **300-HL stainless steel tanks**
- Diameter 2.87 m
- height 5.79 m

10 **250-HL stainless steel tanks**
- Diameter 2.63 m
- height 5.76 m

10 **150-HL stainless steel tanks**
- Diameter 2.39 m
- height 4.59 m

10 **100-HL stainless steel tanks**
- Diameter 1.91 m
- height 4.44 m

10 **50-HL stainless steel tanks**
- Diameter 1.44 m
- height 3.90 m

10 **25-HL stainless steel tanks**
- Diameter 1.20 m
- height 3.12 m

40m **Foot irons**
Completely in stainless steel

100m **Stainless steel gangways**
To serve external and internal tanks

2 **Agitators**
To be inserted in the tanks for the correction of the wines

1 **Air and glycol must-chiller (refrigerator)**
For the control of the musts

SUMMARY

DEPARTMENT		VALUE (in Lit. and Birr)
- RECEPTION OF GRAPES	LIT.	80,800,000.=
	Birr	94,890.=
- WHITE AND RED VINIFICATION LINES	LIT.	309,842,000.=
	Birr	363,880.=
- WHITE VINIFICATION LINE	LIT.	132,800,000.=
	Birr	155,960.=
- RED VINIFICATION - FRESH AND DRIED GRAPES	LIT.	1,509,500,000.=
	Birr	1,772,750.=
- MUST TRANSFER	LIT.	310,850,000.=
	Birr	365,060.=
- SECONDARY FERMENTATION	LIT.	2,042,130,000.=
	Birr	2,398,270.=
- MUST AND WINE FILTRATION	LIT.	296,700,000.=
	Birr	348,440.=
- CHILLING (REFRIGERATION)	LIT.	582,051,000.=
	Birr	683,560.=
- HOT BOTTLING	LIT.	1,247,120,000.=
	Birr	1,464,620.=
- MISCELLANEOUS PLANTS AND SERVICES	LIT.	802,700,000.=
	Birr	942,690.=
GRAND TOTAL	**LIT.**	**7,314,493,000.=**
	Birr	**8,590,120.=**
	US $	**4,149,816.=**

Note: Equipment temporarily supplied to Makanissa Winery is included.

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B - AWASH LIDETA WINERY

(Subsidiary Bottling Unit)

Bottling capacity: 4,000 Litres/hour

ADDITIONAL EQUIPMENT

CHILLING DEPARTMENT
(REFRIGERATION)

N.

1 **Refrigeration unit**
. Capacity 120,000 Fr/h, multipurpose refrigeration with air cooling

1 **Recovery tower water cooling**
. Capacity 500,000 Fr/h

1 **Electric control switchboard**

12 **250-HL stainless steel heat-insulated vats**
For stabilization of the wine

1 **Automatic decalcification/water softening unit**
. Capacity 30 m^3/h

1 **Microfiltration plant**
. Capacity 15,000 lt/h

OVERALL PRICE LIT. 584,000,000.=

Birr 685,850.=

"ENOSTERILE" BOTTLING PLANT FOR PASTEURIZATION OF SPARKLING WINES - CAPACITY 4,000 LITERS/HOUR

N.	
1	**Heating plant** With two 1,200,000 kg/Cal boilers, complete with accessories for efficient operation
4	**250-HL stainless steel tanks** For drawing the wine into the filling machine
1	**Nitrogen distribution unit**
1	**50-HL saturator tower**
1	**Tapper for crown caps** . Capacity 4,000 bottles/hour
1	**Missing stopper detector**
1	**Automatic distributor of heat-retractable caps**
1	**Set of supplementary formats**
1	**Set of supplementary archimedean screws**
1	**Cap retraction and bottle-neck drying tunnel**
1	**Cap polisher on the bottles**
1	**Set of angle stations, power units, accumulation platform, etc.**
1	**Roller platform for transport of cases**
-	**Steam-raising plant, water supply installation and air plants at the bottling line**
1	**Automatic tapper for cardboards**

N.

1 **Centralized elcctric panel**
For control and protection of motors installed on machinery

OVERALL PRICE	LIT.	374,300,000.=
	Birr	439,580.=

MISCELLANEOUS PLANTS

N.	
1	**Set of flues, electricity-drive suction fans** For carbon and sulphur dioxide. Air conditioners
1	**Conveyor belts** For transportation of containers
2	**1,000-LT air compressor** With 3 motors
1	**Electrically-driven pallet carrier ("electric mule")** With recharging station . Capacity 2,000 kg
1	**Diesel-driven pallet carrier** . Capacity 2,500 kg . lifting height 5.6 m
4	**Manually-drawn hydraulic trolleys** . Capacity 1,000 kg
1	**Set of equipment** For integration analytical laboratory
1	**Water supply system** Outside the winery, and lifting equipment
1	**Water supply installation** Inside the winery
1	**1,000-HL stand-by water tank** Complete with surge tank of 30 hl at 6 atm. and two pumps
1	**Chlorination plant** For disinfecting water
1	**Fire-fighting plant**

N.

- **Workshop equipment**

- **Electricity installation**
  Complete with power cables, lighting cables, sockets, lamps, outsid poles (installed in place)

- **Office equipment (desks, shelving, etc.)**

1,000 **4-way seasoned timber pallets**
Dimensions: 1,000 x 1,200

1 **Set of fixed stainless steel piping**
Various diameters

OVERALL PRICE LIT. 595,450,000.=

Birr 699,300.=(1)

---

(1) Of which: Birr - 484,740 for equipment
- 98,300 for internal vehicles
- 116,260 for office equipment and non-technologic equipment

SUMMARY

Department	**Value (in Lit. and Birr)**
. CHILLING (REFRIGERATION)	LIT. 584,000,000.=
	Birr 685,850.=
. BOTTLING	LIT. 374,300,000.=
	Birr 439,580.=
. MISCELLANEOUS PLANTS	LIT. 595,450,000.=
	Birr 699,300.=
Total	**LIT. 1,553,750,000.=**
	Birr 1,824,730.=
	US $ 881,510.=

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C – AWASH MAKANISSA WINERY

Wine-making capacity: 20,00 ql. of fresh grape

and 110,000 ql. of dry raisin

ADDITIONAL EQUIPMENT

Note: Almost all listed equipment are temporarely supplied and after - wards transferred to the New Winery. Equipment which will remain at the winery are marked with asterisk (*)

RECEPTION OF GRAPES

N.

1 **Weighing installation (*)**
Consisting of:
. weighbridge
. 14 x 3 m platform, capacity 60,000 kg
. dial-type automatic head
. terminal with visual indication and rapid print out

1 **Probe-type sampler**
With articulate arm

1 **Refractometer station**
Automatic type for measuring sugar-content of the musts

OVERALL PRICE	LIT.	80,800,000.=	
	Birr	94,890.=	
Of which	LIT.	44,000,000.=	(*)
	Birr	516,735.=	(*)

WINE-MAKING LINES, IN WHITE AND RED

Working capacity: 200-250 ql/h

N.

1 **5.5-HP screw conveyor**
All parts in contact with the liquid in stainless steel, AISI 304 length 6 x 2.50, designed for unloading from both sides - complete with reducers and safety guards

1 **7.5-HP roller pressing-disteming crushers**
Of 250-ql capacity with all parts in contact with the li - quid in stainless steel - 1. 330 x 95 x 160

1 **Stalk extractor**
Type A R 300, complete with 12-HP motor, PVC pipes, curved tressle

1 **7/8-HP electrically-driven piston pump**
Two-cylinder type with all parts in contact with the liquid in stainless steel.
Hourly delivery 450/600 hl serving the two wine-presses

1 **Electric switchboard**
For control, command, and synchronization of the series-connec - ted machines

1 **6-HP liter-counting piston pump**
Hourly delivery 200/400 ql - needed for racking off, blending , and controls

2 **4-HP high-pressure pumps (*)**
Working pressure 30 atm, suitable for cleaning vats and machine- ry

1 **Heating plant**
For cleaning the dried grapes and wine-presses
. 1,200,000 kg/cal hour
Complete with accessories

N.

1 **6-HP rctary conveyor with grilled double bottom**
All parts in contact with liquid made completely in stainless steel ; suitable for pre-washing of dried grapes before their transfer to wine-presses; containing capacity about 100 ql

1 **Automatic metering plant for administration of sulphur dioxide - 1 HP**
Complete with two distribution units

150 m (approx) **100-mm diameter fixed piping (*)**
For conveyance of crushed grapes from the presses to the vinification sector

50 m (approx) **Mobile reeled piping (*)**
For conveyance of crushed grapes, connected up to the 100 mm diameter fixed piping

OVERALL PRICE	LIT.	270,450,000.=
	Birr	317,620.=
Of which	LIT.	35,625,000.=(*)
	Birr	41,840.=(*)

WINE-MAKING LINE, IN WHITE

N.	
1	**5.5-HP 640 mm diameter inclined separator** . Capacity 250 ql All parts in contact with the liquid in 304 stainless steel; suitable for first separating of the white grapes meant for making white wine
1	**15-HP T. 640 continuous press** Suitable for pressing the lees coming from the above-mentioned separator - all parts in contact with the liquid in stainless steel
1	**Centralized dial-type control panel** For controlling the two separating-pressing machines, air compressor, control unit for pressure or lees press
2	**5.5-8 HP double-piston pumps** Delivery 500 hl/h,for conveyance of must produced from the pressing line to the fermentation tanks

OVERALL PRICE LIT. 132,800,000.=

Birr 155,960.=

WINE-MAKING LINE, IN RFD, FOR FRESH AND DRIED GRAPES

Working capacity: 40,000 ql/year of fresh grapes; in addition 130,000 hl/ /year of wine from dry raisin

N.

10 **500-hl press-separator-extractors**
- Made entirely in AISI 304 stainless steel;
- equiped with electric panels, timers, idletime programmers , booster units, pomace extraction screws, and 12-HP power units with speed reducers:
  .. height 10.20 m
  .. diameter 3.00 cm
  .. height of discharge mouth 100 mm

1 **Spiral staircases**
Entirely in stainless steel
- Height 11.50

23m **Foot irons**

40m **Wine-press connecting gangways**
Completely in stainless steel

1 **Racker-off for separation of skins**

1 **Rotary-brush filter**
For coarse impurities

2 **5.5-HP screw conveyors for pomace**
To be placed under the wine-presses, each 20 m long, 1 m wide, 0.70 m high

1 **7.5-HP screw elevators for pomace**
In stainless steel, for conveyance to the exhausting presses : 5 m long

N.	
10 m	**Screw conveyors** For exhausted pomace, suitable for removal of the pomace from the presses ; made in stainless steel
10 m	**Inclined screw conveyor**
2	**Transitable manhole convers** For the four vats under the presses (for crushed material collec ting)

OVERALL PRICE LIT. 726,350,000.=

Birr 853,030.=

MUST TRANSFER

N.

300 m **Mobile reeled piping**
With relative fittings for transfer of the musts. Supplied in various diameters

2 **8-11-HP pumps**
Suitable for racking off.
. Capacity: 600-700 hl/h

2 **Pumps**
As described above, suitable for tunning the secondary fermentations
. Capacity 500 hl

3 **Pumps**
As decribed above, but with 3-4 HP power for shreddings
. Capacity 300 hl

2 **2.7-4-HP pumps**
As described above, for topping up and draughts
. Capacity 100/200 hl

1 **15-HP rotary pump**
For transfer of dregs and dried grapes
. Delivery 250 hl

300 m **Mobile piping for secondary fermentation**
Complete with fittings, bends, etc.

2 **30-HL wheel-mounted sugar dissolvers**
In stainless steel

OVERALL PRICE LIT. 195,900,000.=

Birr 230,060.=

N.

1 **Nitrogen distribution unit**
In the shreddings tanks

OVERALL PRICE LIT. 483,975,000.=

Birr 568,380.=

MUST AND WINE FILTERING PLANT

N.	
1	**Gigantic press filter** Mod. 100 x 100, automatic, complete with fossil-flower feed unit
1	**Press filter** 40 x 40 - 40 plates, for filtration of dreg residues coming from the treatments
1	**300-HL dry-type rougher filter** Self-cleaning, with automatic discharge
1	**Stainless steel brillianting filter** 40 x 40 - 80 plates, trolley-mounted, snap closure, complete with pumps
1	**Chemicals mixer**
1	**5 l portable sulphitometer** For wines correction

OVERALL PRICE LIT. 237,850,000.=

Birr 279,330.=

MISCELLANEOUS PLANTS (*)

N.	
1	**Set of equipment** To complete the analytic laboratory
1	**Set of supplementary equipment** To complete the workshop
1	**1000-HL tank for stand-by water** Equiped with 30-hl surge-tank with double pump, working pressure 6 atm
1	**Water-supply installation**
1	**Fire-fighting installation**
1	**Chlorination plant** Of adequate capacity
1	**Well** With lifting plant
-	**Complete** overhaul of the internal and external electricity plant to conform with safety regulations.

OVERALL PRICE LIT. 358,000,000.=(*)

Birr 420,430.=(*)

SUMMARY

DEPARTMENT	Total value (in Lit and Birr)		Value (in Lit. and Birr) of equipment to be transferred to the new plant	
RECEPTION OF GRAPES	Lit.	80,800,000	Lit.	36,800,000
	Birr	94,890	Birr	43,220
WINE-MAKING LINE IN WHITE AND RED	Lit.	270,450,000	Lit.	234,825,000
	Birr	317,620	Birr	275,780
WINE-MAKING LINE IN WHITE	Lit.	132,800,000	Lit.	132,800,000
	Birr	155,960	Birr	155,960
WINE-MAKING LINE IN RED FOR FRESH AND DRIED GRAPES	Lit.	726,350,000	Lit.	726,350,000
	Birr	853,030	Birr	853,030
MUST TRANSFER	Lit.	195,900,000	Lit.	195,900,000
	Birr	230,060	Birr	230,060
SECONDARY FERMENTATION	Lit.	483,975,000	Lit.	483,975,000
	Birr	568,380	Birr	568,380
MUST AND WINE FIL - TRATION	Lit.	237,850,000	Lit.	237,850,000
	Birr	279,330	Birr	279,330
MISCELLANEOUS PLANTS	Lit.	358,000,000	Lit.	-
	Birr	420,430	Birr	-
	Lit.	**2,486,125,000**	**Lit.**	**2,048,500,000**
	Birr	**2,919,700**	**Birr**	**2,405,760**
	US $	**1,410,480**	**US $**	**1,162,030**
Equipment which will remain to Makanissa Winery			**Lit.**	**437,625,000**
			Birr	**513,940**
			US $	**248,280**

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D - ASMARA WINE FACTORY

- WINE PRODUCTIVE CAPACITY: 100-150 hl/hour, white and red (fresh grape: 10%; dry raisin: 90%)
- BOTTLING CAPACITY: 1,500 litres/hour

ADDITIONAL EQUIPMENT

RECEPTION OF GRAPES AND SPECIAL EQUIPMENT ONLY FOR FRESH GRAPE HANDLING AND PROCESSING (1)

N.

1 **Weighing installation**
Consisting in:
- weigh-bridge
- 8 x 3m platform, capacity 40 t
- dial-type automatic head
- terminal with visual indication (display)

and rapid print out

1 **Refractometric station**
Automatic type for measuring sugar content of the musts

1 **5.5-HP - Screw conveyor**
Equiped with reducers and safety devices
- designed for grape unloading from both sides
- length 6 x 2.50 m
- all parts in contact with the liquid mass in stainless steel AISI 304

1 **5.5-HP - Roller disteming crusher**
- Capacity 100-150 q./h, length 330 x 95 x 160
- all parts (as above)

1 **Stalk extractor**
Type AR 300, equiped with 10 HP engine
- PVC pipes; curved trestle

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(1) Since for the moment (and in the short period) there is no availability of fresh grape for industrial use in Eritrea, the equipment listed in this section have not been charged to the project.

N.

1 **5.5-HP - Piston electropump**
Serving the pressing machines
. 2-cylinder type, with all parts in contact with the liquid mass in stainless steel
. delivery capacity 500 hl/hour

1 **Electric switchboard**
For control, command and synchronization of the series-connected machines

OVERALL PRICE LIT. 100,900,000.=

Birr 118,500.=

WINE-MAKING LINE, FOR FRESH AND DRIED GRAPES

N.

1 **4-HP - High pressure pump**
For cleaning vats and machines
. working pressure 30 atm

1 **6-HP - Rotating conveyor with grilled double bottom**
For the pre-washing and cleaning of dry raisin before their delivery to the wine-making line
. containing capacity: 50 ql
. all parts in contact with the liquid mass in stainless steel

1 **Rotating pump**
For dry raisin conveyance
. capacity: 150-200 ql/h

1 **1-HP - Automatic metering unit for distribution of sulphur anhydride**
Complete with two distribution assemblies

100m (about) **100 mm Ø fixed piping**
For conveyance of crushed grape from the wine presses to the vinification sector

50m (about) **100 mm Ø mobile reeled piping**
For conveyance of crushed grape, to be connected to the fixed piping 100 mm Ø

1 **4.5-HP - Inclined separator**
For the first separating of the grape destined to vinification and of the pomace coming from the vinificators
. diameter 500 mm
. capacity 120-150 ql/h

1 **Continuous pressing machine**
For the exhausting of pomace coming from the inclined separator
. diameter 500 mm
. capacity 120-150 ql/h
. all parts, etc. (see above)

N.

1	**Centralized dial-type control panel** For controlling the two separating - pressing machines . equiped with air compressor and control unit for pomace exhausting pressure	
2	**500 hl - Press - separator - extractors** Entirely in stainless steel AISI 304 . equiped with electric switchboard, timer, idletime, and 12 HP power units with speed reducers . height 10.20 m . diameter 3 cm . height of discharge outlet100 mm	
12m	**Stainless steel foot irons**	
7 m	**Stainless steel gangways** For connecting with wine-making line	
1	**Racker-off for skins separation**	
7 m	**5.5-HP - Screw conveyors for pomace** To be placed under the wine-presses, each 20 m long, 1 m wide and 0.70 m high	
1	**5.5-HP - Screw elevator for pomace** In stainless steel, for conveyance to the exhausting presses . 5 m long	
10m	**Screw conveyors for exhausted pomace** In stainless steel, for removal of pomace from the presses	
2	**Transitable manhole covers** For the two vats under the presses (for crushed material collecting).	
	OVERALL PRICE	LIT. 331,350,000.= Birr 389,140.=
	Including first sector (grape reception and special grape processing equipment)	LIT. 432,250,000.= Birr 507,640.=

MUST TRANSFER AND FILTRATION

N.	
200m	**Mobile reeled piping** With relative fittings, for must transfer . supplied in various diameters
2	**5.5-8 HP - Pumps** For wine tunning . delivery 500 hl/h . all parts in contact with the liquid mass in stainless steel
2	**3-4 HP - 2-piston pumps** For must conveyance from the exhausting press . delivery 300 hl/h
2	**Pumps** As described above, for various tunnings
2	**Pumps** As described above . delivery 100-200 hl/h
1	**Sugar dissolvers** Wheel mounted, in stainless steel
2	**Agitators** To be inserted in the vats for wine correction
1	**Air-glycol refrigerators for must (50,000 Fr/h)**
1	**Nitrogen distribution unit** For shredding vats
1	**5 kg - Portable sulphurmeter** For injections of sulphurous anhydride (dioxide)

OVERALL PRICE LIT. 155,500,000.=

Birr 182,620.=

MUST AND WINE FILTRATION

N.

1 **Press-filter**
For filtration of dreg residues coming from the treatments
. dimension 40 x 40; 40 plates

1 **Dry-type rougher filter self-cleaning**
With automatic discharge
. capacity 150 hl/h

1 **Stainless steel brillanting filter**
Trolley-mounted, snap closure, complete with pumps
. dimension 40 x 40

1 **Chemicals mixer**
. Capacity 15 hl

OVERALL PRICE LIT. 63,000,000.=

Birr 73,990.=

SECONDARY FERMENTATION

N.	
5	300 HL - Foot mounted stainless steel vats (tanks)
5	250 HL - As above
5	150 HL - As above
5	100 HL - As above
5	50 HL - As above
5	25 HL - As above
50m	Stainless steel gangways
25m	Stainless steel foot irons

OVERALL PRICE LIT. 268,100,000.=

Birr 314,860.=

REFRIGERATION DEPARTMENT

N.	
1	**Refrigeration unit** For must refrigeration and control, equiped with 2 compressors , motor-driven pump, etc. . air-cooled . capacity 30,000 Fr/h
1	**Electric control panel** For refrigeration unit
4	**180 HL - Insulated stainless steel vats** For wine stabilization
1	**Set of stainless steel connecting pipes**
1	**Automatic decalcinator/water softener unit** . Capacity 10 cu.m/h
1	**Microfiltration plant** . Capacity 2,000 litres/h

OVERALL PRICE LIT. 175,000,000.=

Birr 205,520.=

HOT BOTTLING PLANT FOR SPARKLING AND NON SPARKLING WINES (Not "Enosterile")

Capacity: 1,500 litres/hour

N.

1 **Heating plant**
For dry raisin washing and preparation of "warm bed" in the vinificators
- capacity 600,000 kg/Cal
- complete with all accessories

1 **Macerating-washing machine**
Continuous flow, 8 rows

2 **100 HL - Stainless steel vats**
For drawing wine into the filling machine

1 **Nitrogen distribution unit**

1 **20 HL - Saturator tower**

1 **Three-stages, plate-type pasteurizing unit**
Complete with all accessories, 20 hl capacity

1 **Automatic isobaric filling machine**
Equiped with 8 filler taps

1 **Detector for extraneous bodies,**
dirty or broken bottles

1 **Automatic corking machine (for corks)**
With tapping head

1 **Crown-cap tapper**
With tapping head

1 **Automatic distributor of heat-retractable caps**

N.

1 **Set of supplementary formats**

1 **Set of supplementary archimedean screws**

1 **Tunnel for retracting caps and drying of bottles necks**

1 **Cap polisher**
With 20 heads

1 **Labelling machine**
For apply 3 pieces
. production: 2,000 pieces/h

1 **Set of angle stations, power units, accumulation platform, etc.**

1 **Roller platform for crate conveyance**

1 **Steam-water-air plant**
At the bottling line

1 **Automatic carton taping machine**
. Capacity: 400-500 boxes/hour

1 **Centralized electric switchboard**
For control and protection of motors installed on the machines

1 **150 HL - Fuel tank**
In carbon-enamelled iron

OVERALL PRICE LIT. 568,100,000.=

Birr 667,180.=

MISCELLANEOUS PLANTS

N.	
1	**Set of flues,electricity-driven suction fans** For carbon and sulphur dioxides. Air conditioners for offices
1	**Set of supplementary equipment**
1	**Roller conveyor** For container transportation
1	**750 lt - Air compressor** With 2 motors
1	**Electric transpallet ("mule")** With recharging station . capacity 2,000 kg
1	**Diesel-driven transpallet** . Capacity 2,500 kg . lifting height 5.60 m
2	**Hydraulic trolleys**
-	**Integration of analysis laboratory**
-	**Integration and up-dating of the water supply system** Inside and outside the factory
1	**1,000 HL - Stand-by steel water tank** For spare water, equiped with pressure vat, 20 hl, at 6 atm
1	**Chlorination plant**
1	**Fire-fighting plant**
-	**Integration of workshop equipment**
-	**Up-dating of electric plant and network**

N.

- **Integration and up-dating of office equipment**

300 **Seasoned-timber or plastic four-way pallets**
For crate conveyance

OVERALL PRICE LIT. 391,700,000

Birr 460,000 (1)

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(1) Of which: 324,130 for equipment
94,770 for internal vehicles
41,100 for office equipment, non-technologic equipment, incl. furniture

SUMMARY

DEPARTMENT		VALUE (in Lit. and Birr)
. WINE-MAKING LINE FOR FRESH AND DRIED GRAPES	LIT.	331,350,000
	Birr	389,140
. MUST TRANSFER AND FILTRATION	LIT.	155,500,000
	Birr	182,620
. MUST AND WINE FILTRATION	LIT.	63,000,000
	Birr	73,990
. SECONDARY FERMENTATION	LIT.	268,100,000
	Birr	314,860
. REFRIGERATION	LIT.	175,000,000
	Birr	205,520
. BOTTLING	LIT.	568,100,000
	Birr	667,180
. MISCELLANEOUS PLANTS	LIT.	391,700,000
	Birr	460,000
	(1) LIT.	**1,952,750.000**
	(1) (2) Birr	**2,293,310**
	US $	**1,107,880**

(1) + Lit. 100,900,000 (Birr 118,500) in the future, in relation to fresh grape availability in the Eritrea Region (Elaboret Vineyard, other).

(2) Of which Birr 2,157,440 for equipment.

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E - LITTLE CENTRE FOR MUST PREPARATION (1)

(1) The first Centre has been proposed at Zeway Vineyard; the next ones according to some future occurrences (vineyards' grape output, distance, capacity of the grape reception sector in the new winery).

LIST OF ALL REQUIRED EQUIPMENT

N.

2 **300 HL - Stainless steel collecting tanks**
Complete with agitator

1 **Crushing-disteming unit**
Entirely in stainless steel
. capacity: 120-150 q/h

1 **Vane pump**
For conveyance of the crushed grapes
. wholly in stainless steel
. delivery: about 200 q/h

30m **100 mm Ø reeled PVC piping**
Connected up for conveyance of crushed grapes

2 **Tanks**
For transportation of must for truck mounting

OVERALL PRICE LIT. 128,180.00.=

Birr 150,530.=

ANNEX 7

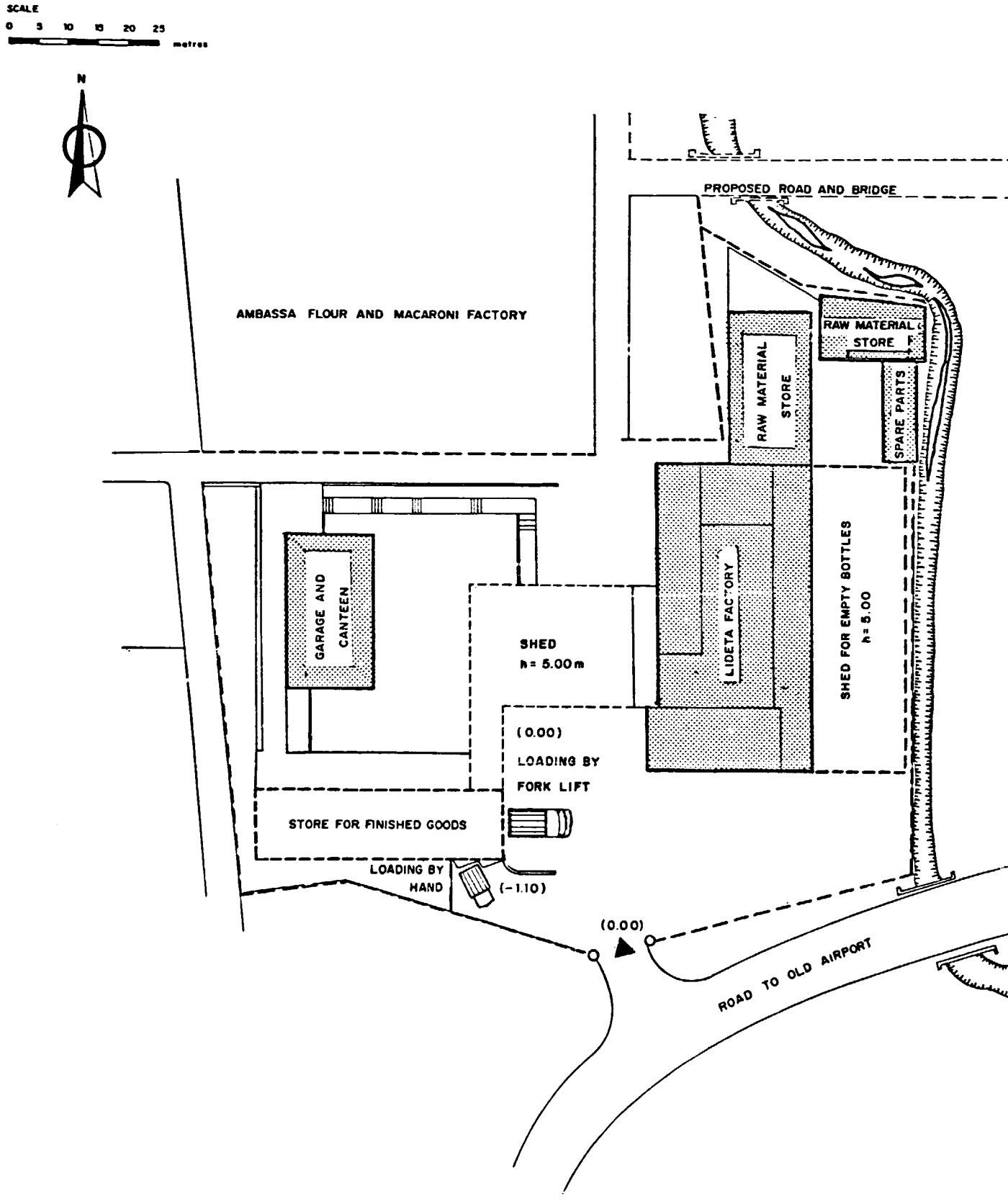
PROPOSED LAYOUT FOR AWASH LIDETA BRANCH

Annex 7

AWASH LIDETA BRANCH

LAYOUT

PROPOSED IMPROVEMENTS



ANNEX 8

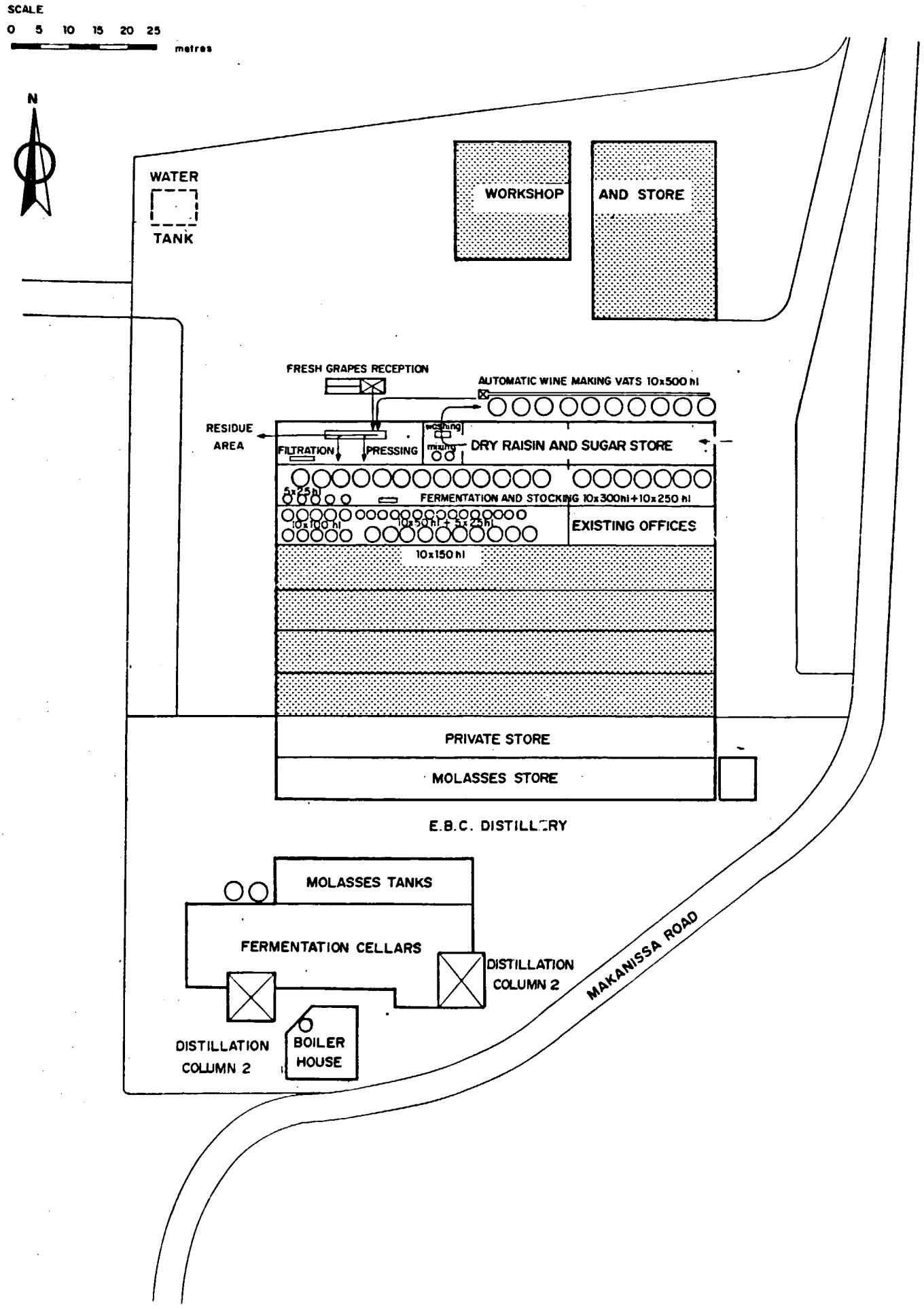
PROPOSED LAYOUT FOR AWASH MAKANISSA BRANCH

AWASH MAKANISSA BRANCH

Annex 8

LAYOUT

PROPOSED TEMPORARY ARRANGEMENTS AND IMPROVEMENTS



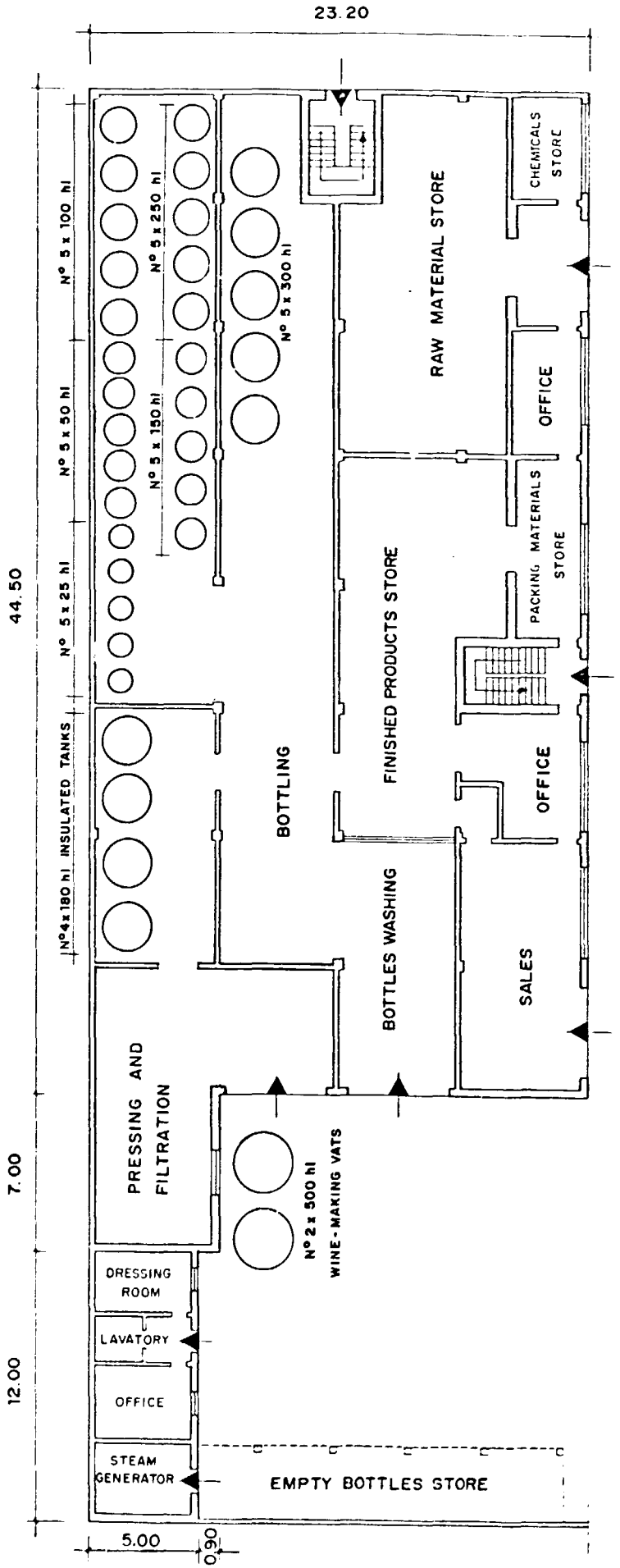
ANNEX 9

PROPOSED LAYOUT FOR ASMARA WINE FACTORY

0 1 2 3 4 5 metres

ASMARA WINE AND LIQUOR FACTORY
PROPOSED IMPROVEMENTS
PLAN

Annex 9



ANNEX 10

NEW AWASH WINERY

PLAN 1 - LAYOUT

PLAN 2 - PLAN

PLAN 3 - LONGITUDINAL SECTION A - B

PLAN 4 - OFFICES BUILDING PLAN

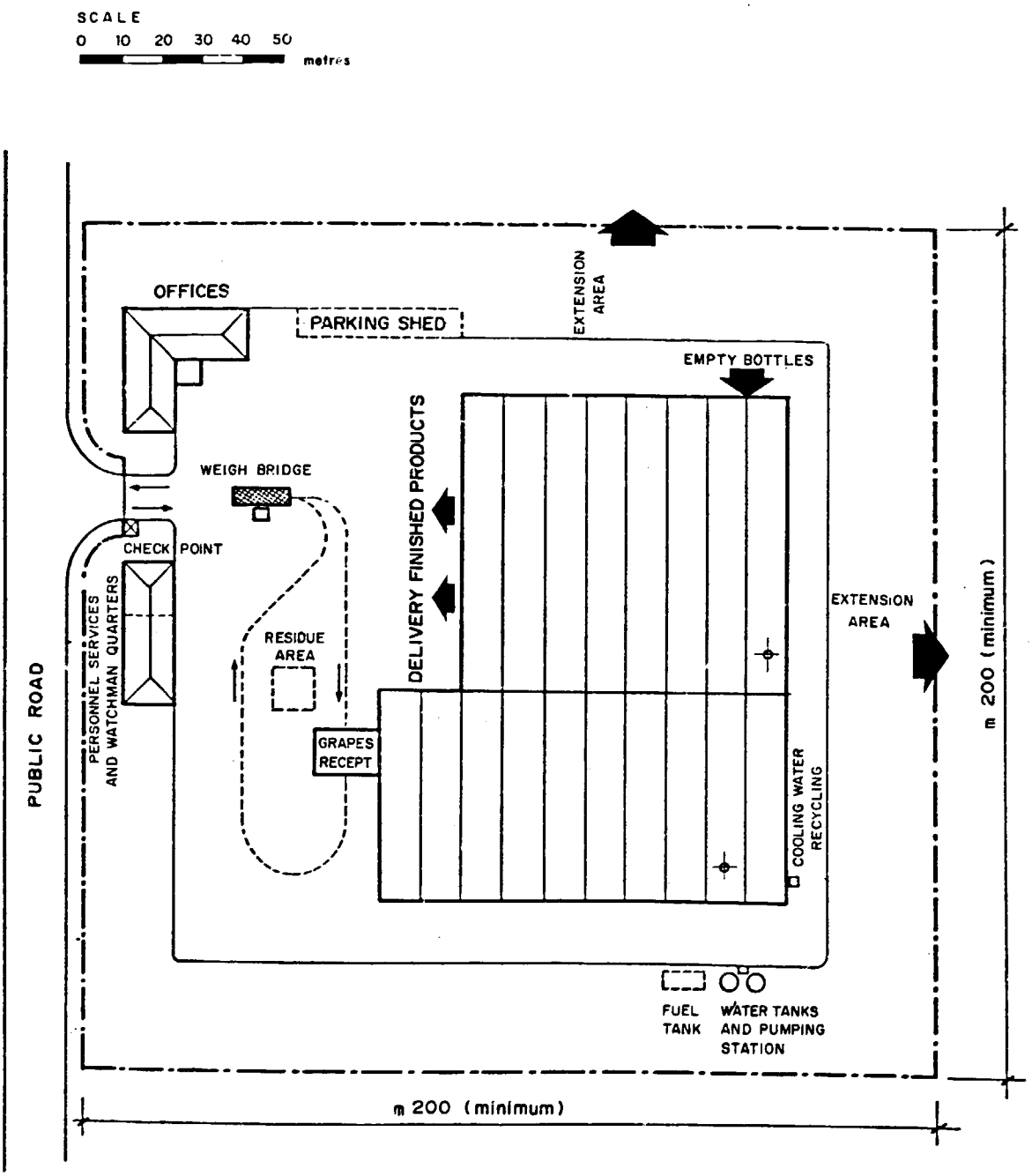
PLAN 5 - PERSONNEL SERVICES - WATCHMEN QUARTERS

PLAN 6 - WEIGHBRIDGE

Annex 10

NEW AWASH WINERY

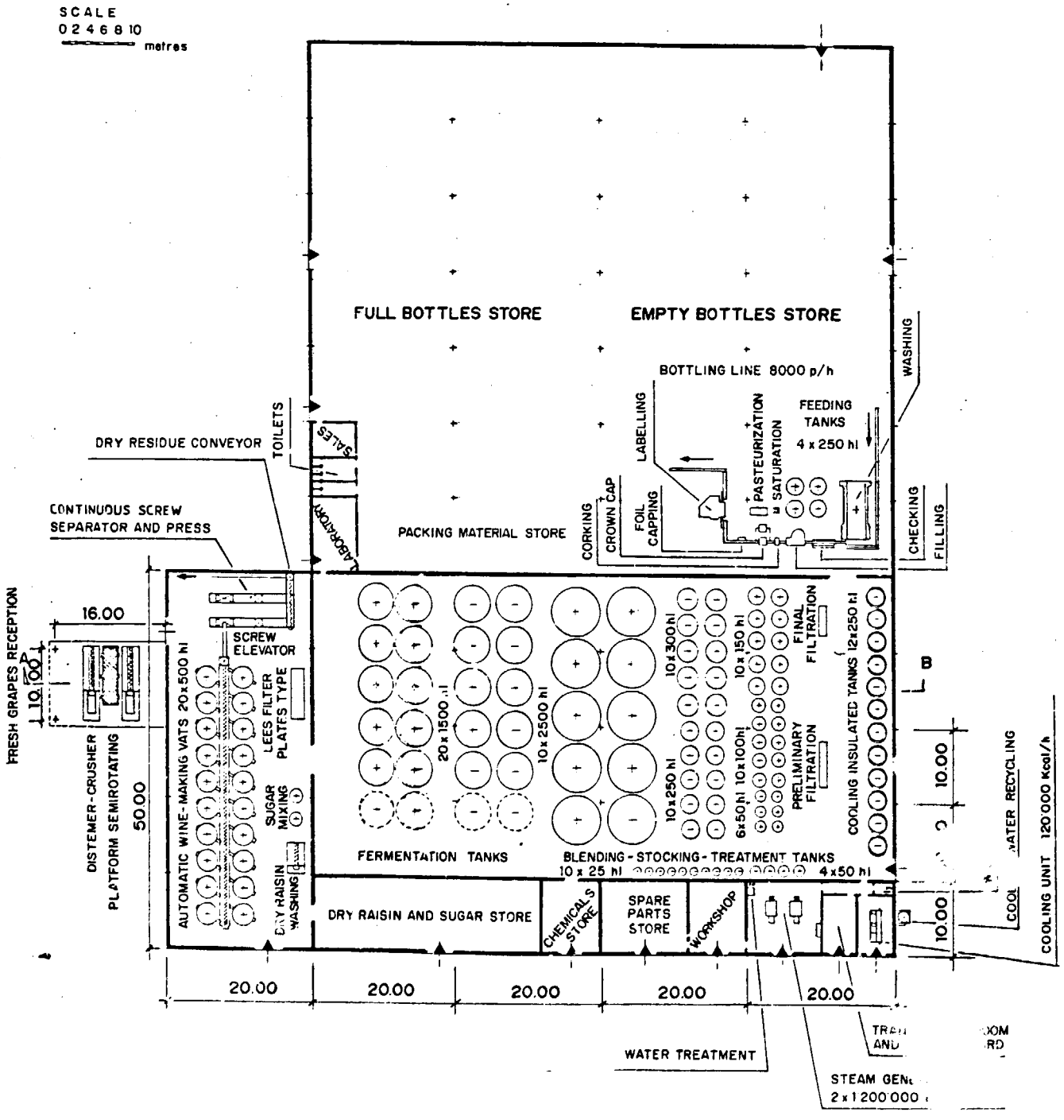
Plan 1 - LAYOUT



Annex 10

NEW AWASH WINERY

Plan 2 - PLAN

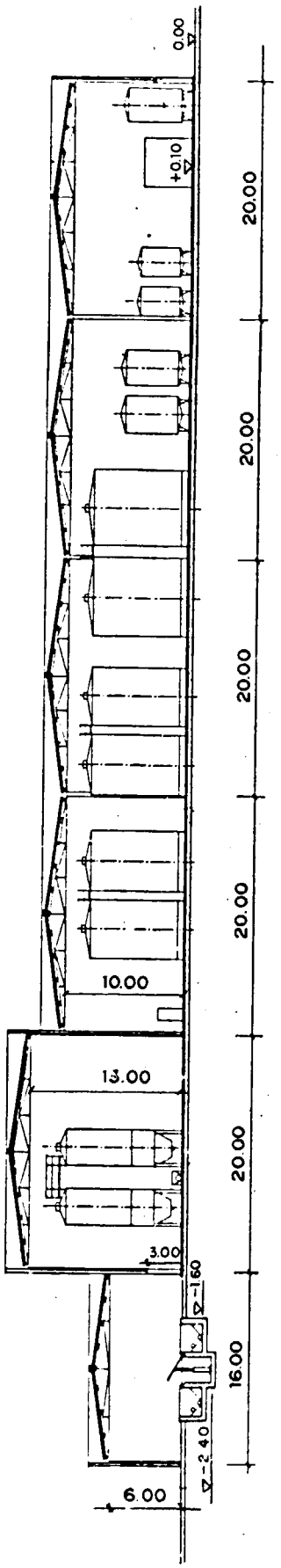


NEW AWASH WINERY

Annex 10

SCALE
0 1 2 3 4 5
metres

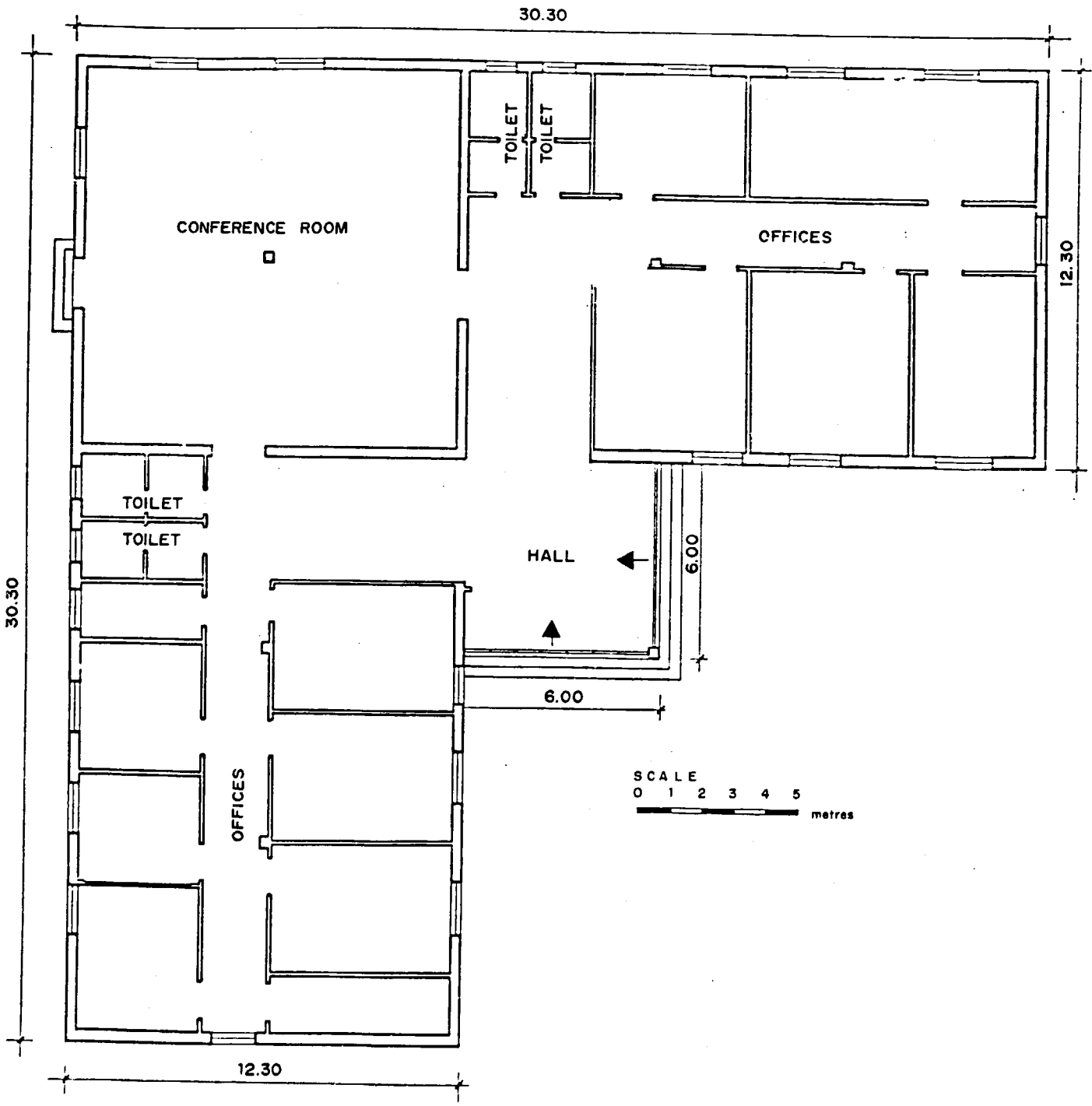
Plan 3- LONGITUDINAL SECTION A-B



Annex 10

NEW AWASH WINERY

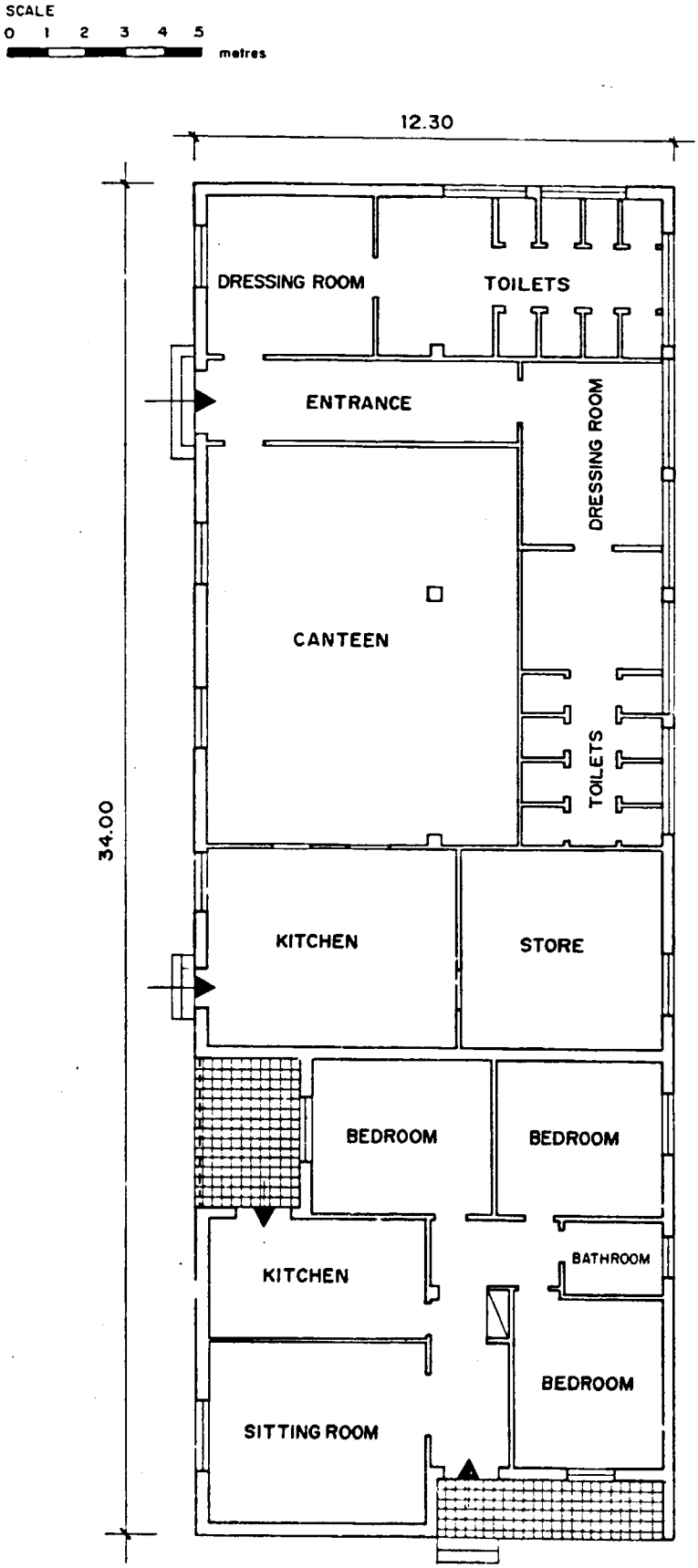
Plan 4 - OFFICES BUILDING PLAN



NEW AWASH WINERY

Plan 5 -PERSONNEL SERVICES - WATCHMAN QUARTERS

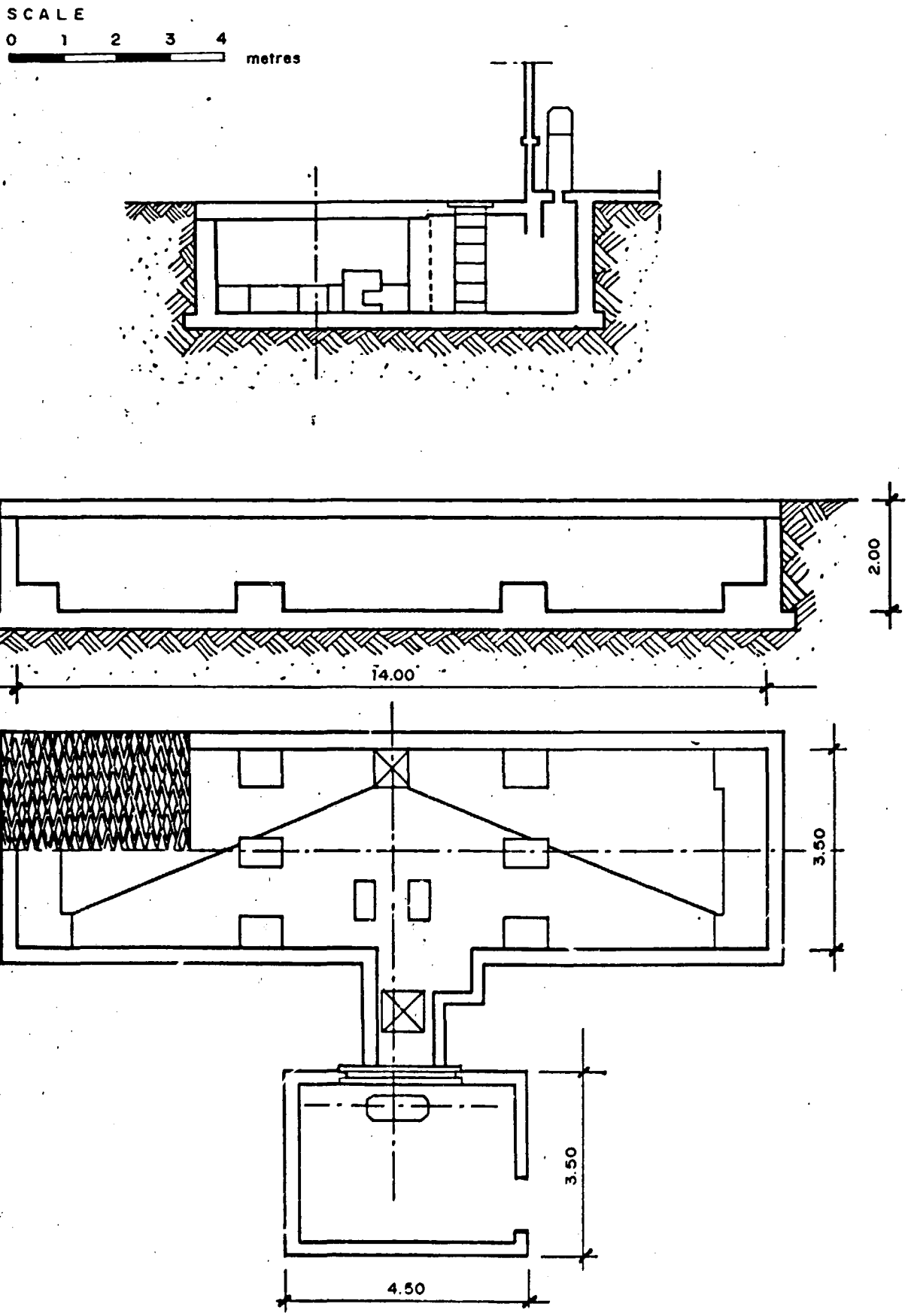
Annex 10



Annex 10

NEW AWASH WINERY

Plan 6 - WEIGH BRIDGE



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ANNEX 11

DETAIL OF THE INVESTMENT, BY PLANT AND SECTOR,

CALCULATION OF THE "FINAL" COST

A. REHABILITATION OF AWASH LIDETA WINERY

B. TEMPORARY REHABILITATION OF AWASH MAKANISSA WINERY

C. REHABILITATION AND INTEGRATION OF ASMARA WINE FACTORY

D. NEW PLANT

E. NEW PLANT: SUCCESSIVE ENLARGEMENTS

F. "MUSTING" CENTRES

G. DETAIL OF REPAIR AND EXTRA MAINTENANCE COSTS FOR EXISTING EQUIPMENT

DETAIL OF THE INVESTMENT, BY PLANT AND SECTOR,

CALCULATION OF THE "FINAL" COST

Page

CONTENTS

Notes:

- Values are expressed in Birr at XI/1985 prices
- Equipments are listed by sector or processing stage according the general list and prices reported in the Annex
- Spare parts, whose price is not included in the general list, have been added in the present document
- Some equipment, not included in the list, have been also added here (in general vehicles for external transport, furniture and other non-technologic equipment).

A) REHABILITATION OF AWASH LIDETA WINERY (value in Birr)

Civil works

. Interventions on external areas	34,800	
.. Contingencies (10%)	3,500	38,300
. Buildings		
.. Restoring of the existing main building, including vats	169,600	
.. Integrations	124,200	
.. Various and contingencies (10%)	29,380	323,180
		361,480

Machinery and equipment (by sector)

. Refrigeration (integration)	685,850	
. Bottling (integration)	439,580	
. Various equipment (excluding vehicles, furniture and other non-technologic equipment)	484,740	
1st total, CIF-Assab incl. assembling	**1,610,170**	
. Custom duties and taxes, landing and transit costs, warehousing duties , inland transport, assembling (local labour) etc. (1)	201,270	
2nd total	**1,811,440**	
. Contingencies (10%)	181,160	1,992,600
		2,354,080

(1) 13-15% of the CIF price, less estimated cost for assembling (around 40% of steel vats value and 3% of the remaining costs.

		./. 2,354,080
Vehicles		
. For internal handling (forklifts, pallets, imported)	98,300	
. One truck (locally assembled or imported)(1)	80,000	
	178,300	
. Custom, landing, etc. (for imported vehicles)	20,700	
	199,000	
. Contingencies (10%)	19,900	218,900
Spare parts(1)		
. For equipment (10%)	155,200	
. For vehicles (12%)	21,400	
	176,600	
. Custom, landing, etc.	25,350	
	201,950	
. Contingencies (10%)	20,200	222,150
Furniture and non-technologic equipment		
. Furniture, incl. Office equipment (2)	136,260	
.. Custom, etc. for imported equipment (40%)	23,240	
.. Contingencies (10%)	15,950	175,450
Repair and extra maintenance works on existing equipment (3)		62,000
	Total	**3,032,580**

(1) Additional equipment, i.e., not included in the general list

(2) Listed (116,260 Birr), plus integration.

(3) See detail in other section of the Annex

B) TEMPORARY REHABILITATION OF AWASH MAKANISSA WINERY

Civil Works (1)

. Interventions on external areas	18,000	
.. Contingencies (10%)	1,800	19,800

Buildings

. Restoring of existing buildings	50,000	
. Integrations	52,700	
. Contingencies (10%)	10,300	113,000
		132,800

Machinery and equipment (2)	**A**	**B**
. Weighing installation	94,890	43,220
. Wine-making lines, in white & red	317,620	275,780
. Wine-making lines, in white	155,960	155,960
. Wine-making lines, for fresh grape and dry raisin	853,030	853,030
. Must movement	230,060	230,060
. Secondary fermentation	568,380	568,380
. Filtration (must and wine)	279,330	279,330
. Various plants	420,430	-
1st total CIF-Assab, incl. assembling	**2,919,700**	**2,405,760**

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(1) For strictly necessary works.

(2) A = total equipment supplied in advance to the winery (1st project year);
B = equipment to be later transferred to the New Plant (2nd project year);
Therefore the final cost of the equipment which will remain in the Winery is 636,560 Birr.

	A	B	
. Custom, landing,transport, etc. (1)	367,880	303,130	132,800
	3,287,580	2,708,890	
. Contingencies (10%)	328,760	270,890	
	3,616,340	2,979,780	3,616,340
			(636,560)
Spare parts (2)			
. For equipment (10%)	257,480	212,190	
.. Custom, etc.	38,620	31,830	
.. Contingencies (10%)	29,610	24,400	
	325,710	268,420	325,710
			(57,290)
Furniture			
. Strictly for integration (2)			15,000
Repair and extra maintenance works existing equipment (3)			53,000
		Total	**4,142,850**
			(894,650)

(1) See note 1, Lideta Winery.

(2) Additional equipment, not listed, etc.

(3) See detail in other section of the Annex.

C) REHABILITATION AND INTEGRATION OF ASMARA WINE FACTORY

Civil Works		
. Intervention on external area	20,600	
.. Contingencies (10%)	2,060	22,660
. Buildings		
.. Restoring of existing building	138,700	
.. Integrations	40,700	
.. Contingencies (10%)	17,940	197,340
		220,000
Machinery and equipment (by sector)		
. Raw material reception, pressing line (1)	389,140	
. Must movement and filtration	182,620	
. Wine and must filtration	73,990	
. Secondary fermentation	314,860	
. Refrigeration	205,520	
. Bottling line	667,180	
. Various equipment, excl. fork - lifts, pallets, office equip - ment and furniture	324,130	
1st total, CIF-Assab, incl. assembling	**2,157,440**	
. Custom, landing, transport, etc. (2)	269,680	
2nd total	**2,427,120**	
. Contingencies (10%)	242,780	2,669,900
		2,889,900

(1) Integrations of equipment for reception and processing of fresh grape have been foreseen in the future, in relation to its availability (118,500 Birr).

(2) See note 1, Lideta Winery.

		./. 2,889,900
Vehicles		
. For internal handling forklifts, pallets, imported)	94,770	
. 1 truck (locally available or imported) (1)	85,000	
	179,770	
. Custom,landing, transport, etc.	18,930	
	198,700	
. Contingencies (10%)	19,900	218,600
Spare parts (1)		
. For equipment (10%)	189,250	
. For vehicles (12%)	21,570	
	211,420	
. Custom, landing, transport, etc.	39,050	
	250,470	
. Contingencies (10%)	25,050	275,520
Furniture and non-technologic equipment		
. Furniture, incl. office equipment (2)	51,100	
.. Custom, landing, transport, etc for imported equipment (40%)	8,220	
.. Contingencies (10%)	5,930	65,250
Repair and extra maintenance works on existing equipment (3)		36,000
	Total	**3,485,270**

(1) Additional equipment, non listed etc.

(2) Listed (41,100 Birr) plus integration.

(3) See detail in other section of the Annex.

D) NEW PLANT

Civil Works		**Birr**
. Area settlement and other civil works, excl. buildings (1)		
.. Ground levelling (40,000 sq.m.)	120,000	
.. Fencing,gate	18,400	
.. Paving (13,400 sq.m.)	281,400	
.. Weighing hole (70 sq.m.)	27,600	
.. Reception holes (80 sq.m.)	32,000	
	479,400	
.. Contingencies (10%)	47,940	527,340
Buildings (2)		
. Main building (20mx50m)+(80m+120m) = = 10,600 sq.m	3,816,000	
. Offices (630 sq.m.)	252,000	
. Personnel services (267 sq.m.)	106,800	
. Guard house (150 sq.m.)	60,400	
. Guard post (9 sq.m.)	3,600	
. Hangars, warehouses (440 sq.m.)	30,800	
	4,269,600	
. Various and contingencies (10%)	426,900	4,696,500
		5,223,840
Machinery and equipment (by sector)		
. Grape reception	94,890	
. Lines for wine-making,in white and red	363,880	
. Lines for wine-making,in white	155,960	
. Lines for wine-making, in red, for fresh grapes and dry raisins	1,772,750	
. Must handling and movement	365,060	
. Secondary fermentation (vats and ancillary equipment)	2,398,270	
	5,150,810	5,223,840

(1) No cost for the purchase of the area.

(2) It was assumed that the construction works will be carried out by local enterprises, with locally available or originally imported material, but payable in local money . This is valid for the remaining plants.

			Birr
	./.	5,150,810	5,223,840
. Wine and must filtration		348,440	
. Refrigeration line		683,560	
. Bottling line		1,464,620	
. Various equipment, excluding vehicles, office equipment and furniture		728,130	
1st total, CIF-Assab, incl. assembling		**8,375,560**	
. Custom, landing, transit, warehousing and inland transport costs (1)		1,083,270	
2nd total		**9,458,830**	
. Contingencies (10%)		945,870	
3rd total		**10,404,700**	
. Less: previously temporarily supplied to Makanissa Winery (see Makanissa)		2,405,760	
.. Custom, landing, etc.		303,130	
.. Contingencies (10%)		270,890	
		2,979,780	
Total (machinery)			**7,424,920**
			12,648,760

(1) 13÷15% of CIF cost, less estimated cost for assembling, that is 40% of vats and reservoirs lines and 3% of the remaining costs.

		Birr
		./. 12,648,760
Vehicles		
. For internal handling (forklifts, pallets: imported)	98,300	
. Trucks and trailors (locally assembled or imported) (1)	330,000	
. Cars (locally assembled or imported) (1)	50,000	
	478,300	
. Custom, landing, etc. on imported vehicles	14,750	
	493,050	
. Contingencies (10%)	49,350	542,400
Spare parts (1)		
. For equipment (10%)	720,300	
. For vehicles (12%)	57,400	
	777,700	
. Custom, etc. for imported equipment and vehicles	122,790	
	900,490	
. Contingencies (10%)	90,050	
	990,540	
. Less: already supplied to Makanissa Plant	-268,420	722,120
		13,913,280

(1) Items added to the annexed equipment list.

		Birr
		./.13,913,280
Other ancillary and non-technologic equipment incl. furniture		
. For offices, warehouses, processing areas, guardian house, social services, etc. (1)	276,260	
. Custom, etc. for imported equipment (about 60% of total value)	54,250	
	330,510	
. Contingencies (10%)	33,040	363,550
Total		**14,276,830**

(1) Lis ed (116,260 Birr) plus integration.

E) NEW PLANT: SUCCESSIVE ENLARGEMENTS

New stocking vats

Each module will be formed by n. 10 stainless steel vats, each for a capacity of 2,500 hl.

• Unit cost, CIF-Assab, incl. assembling	64,600
• Custom, landing, transport, etc.	9,690
• Contingencies (10%)	7,430
Final cost	**81,720 Birr**

Therefore the final cost of each modular en - largement will be **817,200 Birr**

The total cost of the three foreseen modular enlargements (1991, 1994, 1998) will be **2,451,600 Birr**

F) "MUSTING" CENTRES

Little musting centre
(capacity: 12,000 q. grape)

. Equipment, CIF-Assab, incl. assembling (1)	150,530	
.. Custom, landing, transport, etc.	22,580	
.. Contingencies (10%)	17,310	190,420
. Spare parts, incl. custom, etc. and contingencies		11,430
Total		**201,850**

The first Centre will be created at Zeway Vineyard in 1988, the second in 1993, the third in 1996 and the fourth in 1998.

Total final cost of the Musting Centres:

For the equipment	761,680
. For spare parts	45,720
Total	**807,400**

(1) See detail in the general list of equipment (Annex 6).

G) DETAIL OF REPAIR AND EXTRA MAINTENANCE COSTS FOR EXISTING EQUIPMENT
(Refer to Annexes A, B, C and D, Chapter 4) (1)

Lideta Winery (Annex A, point 1.2.3.1)		
. From 8 vats in chestnut wood, 30 hl each: n. 5 to be recovered		4,000
. From 21 vats in chestnut wood, 60 hl each:n.13 to be recovered		27,300
. Interventions on other equipment, incl. 2 rotating washing machines		25,000
1st total		**56,300**
	Contingencies (10%)	5,700
	Total	**62,000**
Makanissa Winery (Annex B, point 2.2.3.1)		
. From 50 vats in chestnut wood, average unit capacity 40 hl: 32 to be recovered		28,800
. Other urgent interventions		20,000
1st total		**48,800**
	Contingencies (10%)	4,200
	Total	**53,000**
Asmara Wine Factory (Annex D, point 4.2.3.1)		
. From 16 vats in chestnut wood, unit average capacity 15hl		7,500
. Other interventions		25,000
1st total		**32,500**
	Contingencies (10%)	3,500
	Total	**36,000**
	On a whole	**151,000**

(1) Cost for the repair of all cement vats have been included in the item "Interventions on existing buildings, incl. cement vats".

A.12/1/2

ANNEX 12

CONSOLIDATED PROJECT INVESTMENT COSTS,

BY PLANT AND YEAR: 1987-2000

Tab. 1 - CONSOLIDATED PROJECT INVESTMENT COSTS, BY PLANT AND YEAR: 1987 - 2000

(Value in Birr, at XI/1985 prices)

INVESTMENT	TOTAL (1)	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
NEW PLANT	16,728,430	5,381,240	8,152,670	742,920	-	817,200	-	-	817,200	-	-	-	817,200	-	-
. Areas settlement and other civil works	527,340	527,340	-	-	-	-	-	-	-	-	-	-	-	-	-
. Buildings	4,696,500	2,817,900	1,878,600	-	-	-	-	-	-	-	-	-	-	-	-
. Machinery and equipment (2) (4)	7,424,920	1,856,000	4,826,000	742,920	-	-	-	-	-	-	-	-	-	-	-
. Vehicles (internal and external)	542,400	-	542,400	-	-	-	-	-	-	-	-	-	-	-	-
. Spare parts	722,120	180,000	542,120	-	-	-	-	-	-	-	-	-	-	-	-
. Furniture and non-technologic equipment	363,550	-	363,550	-	-	-	-	-	-	-	-	-	-	-	-
. Successive modules (enlargement)	2,451,600	-	-	-	-	817,200	-	-	817,200	-	-	-	817,200	-	-
AWASH LIDETA WINERY: REHABILITATION	3,032,580	2,852,580	180,000	-	-	-	-	-	-	-	-	-	-	-	-
. Interventions on external areas	38,300	38,300	-	-	-	-	-	-	-	-	-	-	-	-	-
. Interventions on existing buildings incl. cement vats, and integrations	323,180	323,180	-	-	-	-	-	-	-	-	-	-	-	-	-
. Machinery and equipment (additional) (2)	1,992,600	1,812,600	180,000	-	-		-	-	-	-	-	-	-	-	-
. Repair and extra maintenance works on existing equip.	62,000	62,000	-	-	-	-	-	-	-	-	-	-	-	-	-
. Vehicles (internal and external)	218,900	218 900	-	-	-	-	-	-	-	-	-	-	-	-	-
. Spare parts	222,150	222,150	-	-	-	-	-	-	-	-	-	-	-	-	-
. Furniture and non-technologic equipment (additional)	175,450	175,450	-	-	-	-	-	-	-	-	-	-	-	-	-
AWASH NAKANISSA WINERY: TEMPORARY REHABILITATION	4,142,850	3,782,850	360,000	-	-	-	-	-	-	-	-	-	-	-	-
. Interventions on external areas	19,800	19,800	-	-	-	-	-	-	-	-	-	-	-	-	-
. Interventions on existing buildings	113,000	113,000	-	-	-	-	-	-	-	-	-	-	-	-	-
. Machinery and equipment (3)	3,616,340	3,256,340	360,000	-	-	-	-	-	-	-	-	-	-	-	-
. Repair and extra maintenance works on existing equipment	53,000	53,000	-	-	-	-	-	-	-	-	-	-	-	-	-
. Spare parts	325,710	325,710	-	-	-	-	-	-	-	-	-	-	-	-	-
. Furniture and non technologic equipment (additional)	15,000	15,000	-	-	-	-	-	-	-	-	-	-	-	-	-
ASMARA WINE FACTORY: REHABILITATION AND INTEGRATION	3,485,270	3,245,270	240,000	-	-	-	-	-	-	-	-	-	-	-	-
. Interventions on external areas	22,660	22,660	-	-	-	-	-	-	-	-	-	-	-	-	-
. Interventions on existing buildings, incl. cement vats, and integrations	197,340	197,340	-	-	-	-	-	-	-	-	-	-	-	-	-
. Machinery and equipment (additional) (2) (5)	2,669,900	2,429,900	240,000	-	-	-	-	-	-	-	-	-	-	-	-
. Repair and extra maintenance works on existing equipment	36,000	36,000	-	-	-	-	-	-	-	-	-	-	-	-	-
. Vehicles (internal and external) (additional)	218,600	218,600	-	-	-	-	-	-	-	-	-	-	-	-	-
. Spare parts	275,520	275,520	-	-	-	-	-	-	-	-	-	-	-	-	-
. Furniture and non-technologic equipment (additional)	65,250	65,250	-	-	-	-	-	-	-	-	-	-	-	-	-

(Continued tab. 1)

INVESTMENT	TOTAL (1)	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
CENTRES FOR MUST PREPARATION (AT THE VINEYARDS)	807,400	-	201,850	-	-	-	-	201,850	-	-	201,850	-	201,850	-	-
. Equipment	761,680	-	190,420	-	-	-	-	190,420	-	-	190,420	-	190,420	-	-
. spare parts	45,720	-	11,430	-	-	-	-	11,430	-	-	11,430	-	11,430	-	-
COST FOR EQUIPMENT EXCHANGES BETWEEN ETHIOPIAN WINERIES DISASSEMBLING TRANSPORT AND REASSEMBLING COSTS)	270,000	-	270,000	-	-	-	-	-	-	-	-	-	-	-	-
TECHNICAL ASSISTANCE	294,000	-	194,000	100,000	-	-	-	-	-	-	-	-	-	-	-
. Expert in mechanics and assembling	194,000	-	194,000	-	-	-	-	-	-	-	-	-	-	-	-
. Expert in enologic processes	100,000	-	-	100,000	-	-	-	-	-	-	-	-	-	-	-
TRAINING OF ETHIOPIAN PERSONNEL	52,850	-	52,850	-	-	-	-	-	-	-	-	-	-	-	-
. For 5 Ethiopian enotechnicians in Italy (6)	52,850	-	52,850	-	-	-	-	-	-	-	-	-	-	-	-
PRELIMINARY AND OTHER ORGANIZATIONAL EXPENSES	140,000	140,000	-	-	-	-	-	-	-	-	-	-	-	-	-
. For preliminary surveys and studies and other expenses connected to the project (7)	140,000	140,000		-	-	-	-	-	-	-	-	-	-	-	-
TOTAL	28,953,380	15,401,940	9,651,370	842,920	-	817,200	-	201,850	817,200	-	201,850	-	1,019,050	-	-
%	100.0	53.2	33.4	2.9		2.8		0.7	2.8		0.7		3.5		

(1) Investment costs (final) are inclusive of: a) Sea freight and insurance (hypothesis of transport with non Ethiopian ships; b) custom duties and taxes; c) landing costs; d) warehousing duties for a reasonable period before land transport; e) land transport from Assab to factories location, incl. loading and unloading; f) assembling costs (care of foreign supplier, plus local labour); equipment start off, proofs and tests. For costs originally in foreign currency (US $ and Italian Lire) the following rates of exchange have been applied: 1$ = 2.07 Birr 1$ = 1,762 It. lire (average last quarter 1985). As a result 1 Birr = 581.50 Italian Lire (cross exchange).

(2) Payments have been foreseen as follows : 25% advance at order time, 65% main payment at shipping (FOB) or arrival (CIF), 10% at 3 to 6 months after operation start, as a guarantee of normal operational requirements.

(3) Equipment temporarely supplied to the factory, then (in the following year) transferred to the New Plant.

(4) In reality the total value of the New Plant equipment, after the tranfer from Makanissa Winery (see note 3), will be 10,404,700 B.

(5) Should the Eritrean vineyards (Elaboret) be restructured in the future, a cost of 118,500 B. for additional equipment (related to fresh grape reception and processing) is foreseen (not included in this document)

(6) Only stay cost in Italy, plus air travels

(7) Cost of the executive project and yard organization not included (see text).

A.13/1/2

ANNEX 13

DETAIL OF PROJECT ANNUAL CONSOLIDATED COSTS

1987 - 2000

Tab.1 - DETAIL OF PROJECT ANNUAL CONSOLIDATED COSTS - 1987 - 2000

(in 000 Birr, at XI/1985 prices)

DESCRIPTION	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	%
PLANNED TOTAL PRODUCTION, according average-high assumption on demand projection (1), hl. out of which	110,000	133,400	147,900	165,300	183,100	198,200	213,600	226,800	239,200	250,400	260,900	271,400	281,300	290,900	-
: wine from fresh grape, hl (2)	(5,825)	(9,445)	(13,100)	(19,690)	(24,640)	(28,850)	(32,615)	(36,300)	(39,350)	(41,770)	(44,190)	(46,340)	(48,125)	(49,500)	
: wine from dry raisin, hl (2)	(104,175)	(123,955)	(134,800)	(145,610)	(158,460)	(169,350)	(180,985)	(190,500)	(199,850)	(208,630)	(216,710)	(225,060)	(233,175)	(241,400)	
RAW AND AUXILIARY MATERIAL (000 B)	5,402.0	7,026.6	8,315.7	10,301.7	11,840.3	13,029.2	14,030.4	14,798.9	15,357.0 (17,074.2)	15,785.7	16,224.7	16,591.3	17,034.2	17,491.3 (21,091.3)	32.6
Grape, only for pure wine (yield 55%) (quintals)	10,590	17,170	23,820	35,800	44,800	52,450	59,300	66,000	71,550	75,950	80,350	84,250	87,500	90,000	
a) at 130 B/q, present purchase price (000 B)	1,376.7	2,232.1	3,096.6	4,654.0	(5,824.0)	(6,818.5)	(7,709.0)	(8,580.0)	(9,301.5)	(9,873.5)	(10,445.5)	(10,952.5)	(11,375.0)	(11,700.0)	
b) at 127 + 90 B/q from 1991 to 2000 (3) (000 B)	(.....)	(.....)	(.....)	(.....)	5,689.6	6,451.4	6,997.4	7,392.0	7,584.3	7,670.9	7,793.9	7,835.3	7,962.5	8,100.0	15.1
Dry raisin only for dry raisin wine(6% of wine) (q.)	6,250	7,437	8,088	8,737	9,508	10,161	10,859	11,430	11,991	12,518	13,003	13,504	13,990	14,484	
at 255 B/q (000 B)	1,593.8	1,896.4	2,062.4	2,227.9	2,424.5	2,591.1	2,769.0	2,914.7	3,057.7	3,192.1	3,315.8	3,443.5	3,567.4	3,693.4	6.9
Sugar, only for dry raisin wine (18% of dry raisin wine) (q.)	18,751	22,312	24,264	26,210	28,523	30,483	32,577	34,290	35,973	37,553	39,008	40,511	41,972	43,452	
at 98 B/q (000 B)	1,837.6	2,186.6	2,377.9	2,568.6	2,795.3	2,987.3	3,192.5	3,360.4	3,525.4	3,680.2	3,822.8	3,970.1	4,113.3	4,258.3	7.9
Tartaric acid (0,7% of dry raisin wine) (q.)	729	868	944	1,020	1,109	1,185	1,267	1,334	1,400	1,460	1,517	1,575	1,632	1,690	
at 475 B/q (000 B)	346.3	412.3	448.4	484.5	526.8	562.9	601.8	633.7	665.0	693.5	720.6	748.1	775.2	802.8	1.5
Citric acid (0,1% of dry raisin wine) (q.)	104	124	135	146	158	169	181	191	200	209	217	225	233	241	
at 530 B/q (000 B)	55.1	65.7	71.6	77.4	83.7	89.6	95.9	101.2	106.0	110.8	115.0	119.3	123.5	127.7	0.2
Other, for all wines (bentonite, tannin, metasulphite, sulphuric anhydride, ascrobic acid, etc.) at 1,75 B/Hl (technical parameter) (000 B)	192.5	233.5	258.8	289.3	320.4	346.9	373.8	396.9	418.6	438.2	456.6	475.0	492.3	509.1	1.0
PACKAGING MATERIAL	7,106.1	8,843.9	10,058.1	11,721.7	13,254.1	14,555.2	15,830.6	16,968.3	17,997.9	18,893.8	19,751.2	20,580.4	21,340.2	22,043.4	41.1
Bottles, for grape wine, l. 0.750, not recoverable (4)(000 N)	777	1,259	1,747	2,625	3,285	3,847	4,349	4,840	5,247	5,569	5,892	6,179	6,417	6,600	
at 0.85 B/piece (5) (000 B)	660.4	1,070.1	1,485.0	2,231.3	2,792.2	3,270.0	3,696.7	4,114.0	4,460.0	4,733.7	5,008.2	5,252.1	5,454.5	5,610.0	10,5
Bottles, for dry raisin wine , 5 years duration (000 N)	2,778	3,305	3,595	3,883	4,226	4,516	4,826	5,080	5,329	5,563	5,779	6,002	6,218	6,437	
at 0,85 B/piece (000 B)	2,361.3	2,809.3	3,055.8	3,300.6	3,592.1	3,838.6	4,102.1	4,318.0	4,529.7	4,728.5	4,912.2	5,101.7	5,285.3	5,471.7	10,2
Corks , for grape wine (see bottles), at 0,08 B/piece (000B)	62.2	100.7	139.8	210.0	262.8	307.8	347.9	387.2	419.8	445.5	471.4	494.3	513.4	528.0	1.0
Labels and glue for grape wine (see bottles), at 0,14 B/piece (000 B)	108.8	176.3	244.6	367.5	459.9	538.6	608.9	677.6	734.6	779.7	824.9	865.1	898.4	924.0	1,7
Capsules or crowns, labels, glue for dry raisin wine for total bottles (000 N)	13,890	16,527	17,973	19,415	21,128	22,580	24,131	25,400	26,647	27,817	28,895	30,008	31,090	32,187	

(Continued)

DESCRIPTION		1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	%
at 0,16 B/piece	(000 B)	2,222.4	2,644.3	2,875.7	3,106.4	3,380.5	3,612.8	3,861.0	4,064.0	4,263.5	4,450.7	4,623.2	4,801.3	4,974.4	5,149.9	9.6
Cardboard boxes each for 12 bottles of grape wine	(N)	64,722	104,944	145,556	218,778	273,778	320,555	362,389	403,333	437,222	464,111	491,000	514,489	534,722	550,000	
at 1,10 B/piece including labels, fastening, etc.	(000B)	71.2	115.4	160.1	240.7	301.2	352.6	398.6	443.7	480.9	510.5	540.1	565.9	588.2	605.0	1.1
Plastic boxes, for 12 bottles of dry raisin wine	(000 N)	1,157	1,377	1,498	1,618	1,761	1,882	2,011	2,117	2,221	2,318	2,408	2,500	2,590	2,682	
at 7,00 B/piece, 5 year duration	(000 B)	1,619.8	1,927.8	2,097.2	2,265.2	2,465.4	2,634.8	2,815.4	2,963.8	3,109.4	3,245.2	3,371.2	3,500.0	3,626.0	3,754.8	7.0
UTILITIES		224.9	272.7	302.2	337.5	373.7	404.5	435.8	462.6	487.9	510.7	532.1	553.5	573.6	593.2	1.1
Electricity, at 1,80 B/hl (technical parameter)	(000 B)	198.0	240.1	266.2	297.5	329.6	356.8	384.5	408.2	430.6	450.7	469.6	488.5	506.3	523.6	1.0
Water, for dry raisin wine-making (95% of volume)	(cu. m)	9,897	11,770	12,806	13,833	15,054	16,088	17,194	18,098	18,986	19,820	20,587	21,381	22,152	22,933	
Water for wine processing: 4 l per 1 l total wine	(cu. m)	44,000	53,360	59,160	66,120	73,240	79,280	85,440	90,720	95,680	100,160	104,360	108,560	112,520	116,360	
total water	(cu. m)	53,897	65,136	71,966	79,953	88,294	95,368	102,634	108,818	114,666	119,980	124,947	129,941	134,672	139,293	
at 0,50 B/cu.m	(000 B)	26.9	32.6	36.0	40.0	44.1	47.7	51.3	54.4	57.3	60.0	62.5	65.0	67.3	69.6	0.1
FUEL AND OIL		210.0	254.7	282.4	315.7	349.3	377.9	406.9	431.7	455.0	475.9	495.5	515.1	533.5	551.3	1.0
Fuel for all process, at 1,75 B/hl (techn. par.)	(000 B)	192.5	233.4	258.8	289.3	320.4	346.9	373.8	396.9	418.6	438.2	456.6	475.0	492.3	509.1	0.9
Fuel for transport (gasoil and benzine)	(000 B)	17.5	21.3	23.6	26.4	28.9	31.0	33.1	34.8	36.4	37.7	38.9	40.1	41.2	42.2	0.1
OTHER CONSUPTION PRODUCTS																
Chemicals for labs, cleaning, safety, health, handtools, etc.	(000 B)	201.0	216.2	237.6	264.0	290.4	312.4	336.0	353.6	372.4	388.0	404.2	416.6	418.2	430.0	0.8
PERSONNEL (see Tab. 17)	(000 B)	701.2	733.9	749.4	782.3	856.7	888.9	921.0	997.8	1,096.5	1,137.7	1,162.8	1,225.7	1,244.5	1,244.5	2.3
OVERHEADS		541.0	682.1	725.0	989.6	1,034.3	1,235.0	1,320.5	1,386.4	1,409.6	1,434.0	1,451.4	1,469.1	1,486.9	1,490.0	2.8
Related to the production	(000 B)	227.9	290.8	347.6	407.2	459.0	501.0	539.7	573.1	584.6	596.3	605.2	614.3	623.5	626.6	1.2
Administration general expenses (excl. sales expenses)	(000 B)	313.1	391.3	477.4	582.4	675.3	734.0	780.8	813.3	825.0	837.7	846.2	854.8	863.4	863.4	1.6
MAINTENANCE (see Tab.1, Annex n. 15)	(000 B)	-	458.8	921.9	921.9	921.9	945.6	945.6	954.2	962.3	962.3	970.9	970.9	987.7	987.7	1.8
SALES AND DISTRIBUTION COSTS		1,370.0	1,820.0	2,422.0	2,631.0	2,860.0	3,058.0	3,259.0	3,434.0	3,598.0	3,748.0	3,891.0	4,034.0	4,169.0	4,300.0	8.0
incl. marketing and promotional exp. : variable	(000 B)	1,320.0	1,601.0	1,775.0	1,984.0	2,197.0	2,378.0	2,563.0	2,722.0	2,870.0	3,004.0	3,131.0	3,257.0	3,376.0	3,491.0	6.5
semi-constant	(000 B)	50.0	219.0	647.0 (6)	647.0	663.0	680.0	696.0	712.0	728.0	744.0	760.0	777.0	793.0	809.0	1.5
OTHER COSTS AND CONTINGENCIES (~ 5%)	(000 B)	770.9	983.8	1,176.1	1,377.8	1,553.0	1,695.0	1,826.0	1,939.1	2,035.4	2,114.4	2,190.9	2,263.8	2,334.9	2,401.8	4.5
TOTAL COSTS, before depreciation	(000 B)	16,527.1	21,292.7	25,190.4	29,543.2	33,333.7	36,501.7	39,311.8	41,726.6	43,772.0	45,450.5	47,074.7	48,620.4	50,122.7	51,533.2	96.2
DEPRECIATION (see Tab.1, Annex n. 16)	(000 B)	-	1,232.0	2,300.9	2,300.9	2,300.9	2,341.8	2,341.8	2,360.9	2,401.8	2,401.8	2,420.8	2,115.3	2,044.6	2,044.6	3.8
TOTAL COSTS, before interests and taxation	(000B)	16,527.1	22,524.7	27,491.3	31,944.1	35,634.6	38,843.5	41,653.6	44,087.5	46,173.8	47,852.3	49,495.5	50,735.7	52,167.3	53,577.8	100.0
INDEX NUMBER : year 1 (1987) = 100		100.0	136.3	166.3	193.3	215.6	235.0	252.0	266.8	279.4	289.5	299.5	307.0	315.6	324.2	-

NOTES TO TAB. 1, ANNEX n. 13

(1) See Tab. 11

(2) See Tab. 12

(3) On the assumption that, starting from 1991, fresh grape will be purchased at unit prices progressively decreasing from 1.27 to 0.90 B/kg, as an effect of the planned restructuration and development of the vineyards and consequent lower cultivation costs.

(4) Export of fresh grape wine.

(5) No reduction of the unit price of bottles has been foreseen in the future (see text).

(6) Start-up of the promotional campaign.

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ANNEX 14

WINERIES PERSONNEL AND RELATED COSTS

(1990, 1995, 2000)

TAB. 1 - AWASH LIDETA WINERY

TAB. 2 - ASMARA WINE FACTORY

TAB. 3 - NEW WINERY

Tab. 1 - AWASH LIDETA WINERY: PERSONNEL AND RELATED COST: 1990,1995, 2000

(in 000 B., at XI/1985 prices)

QUALIFICATION	Average Yearly salary (2)	1990		1995 (1)		2000	
		N	Cost	N	Cost	N	Cost
. Manager	16.000	1	16.0	1	16.0	1	16,0
. Administrative Manager	7.500	1	7,5	1	7.5	1	7.5
. Sales Manager	7.000	1	7.0	1	7.0	1	7.0
. Enotechnicians	7.000	2	14.0	2	14.0	2	14.0
. Analyst	7.000	1	7.0	1	7.0	1	7.0
. Aid Analyst	5.000	1	5.0	1	5.0	1	5.0
. Accountants	5.000	2	10,0	2	10.0	2	10.0
. Clerks	4,300	4	17.2	5	21.5	6	25.8
. Secretaries-typists	4,300	3	12.9	3	12.9	3	12.9
. Drivers	4,000	5	20.0	5	20.0	6	24.0
. Guards : (1 x 3 shift)	2,200	3	6.6	3	6.6	3	6.6
. Servicemen	1,800	3	5.4	5	9.0	5	9.0
1st TOTAL	x	**27**	**128.6**	**30**	**136.5**	**32**	**144.8**
. Mechanicians	6,000	2	12.0	2	12.0	2	12.0
. Aid mechanicians	4,500	1	4.5	2	9.0	3	13.5
. Electricians	6,000	1	6.0	2	12.0	2	12.0
. Warehousemen	4,100	3	12.3	4	16.4	4	16.4
. Boiler conductor	4,800	1	4.8	2	9.6	2	9.6
. Head cellar	7,500	1	7.5	2	15.0	2	15.0
. Cellar labour	4,000	4	16.0	6	24.0	7	28.0
. Head bottling	7,500	1	7.5	2	15.0	2	15.0
. Bottling labour (mainly Women)	1,500	18	27.0	38	57.0	40	60.0
. Wine-making labour	4,400	-	-	-	-	-	-
. Refrigeration-filtration labour	4,400	2	8.8	3	13.2	3	13.2
. Forklift operators	3,700	2	7.4	4	14.8	4	14.8
. Various labour (unskilled)	1,800	15	27.0	18	32.4	20	36.0
. Seasonal labour (2 months)	300	9	2.7	12	3.6	13	3.9
2nd TOTAL	x	**60**	**143.5**	**97**	**234.0**	**104**	**249.4**
TOTAL	x	**87**	**272.1**	**127**	**370.5**	**136**	**394.2**
TOTAL INCL. CONTINGENCIES 10%	x	**(87)**	**299.3**	**(127)**	**407.6**	**(136)**	**433.6**

(1) Start of 2nd shift activity in some sectors, only during peak period as a subsidiary bottling unit of the new plant

(2) Including fringe benefits and other indirect social charges.

Tab. 2 - ASMARA WINE FACTORY: PERSONNEL AND RELATED COST: 1990, 1995, 2000

(in 000 B at XI/1985 prices)

QUALIFICATION	Average Yearly Salary (2)	1990		1995		2000	
		N	Cost	N	Cost	N	Cost
. Manager	15,000	1	15.0	1	15.0	1	15.0
. Administration manager	7,500	1	7.5	1	7.5	1	7.5
. Sales manager	7,000	-	-	1	7.0	1	7.0
. Enothecnicians	7,000	2	14.0	2	14.0	2	14.0
. Analyst	7,000	1	7.0	1	7.0	1	7.0
. Accountants	5,000	1	5.0	2	10.0	2	10.0
. Clerks	4,300	2	8.6	3	12.9	3	12.9
. Secretaries-typists	4,300	1	4.3	2	8.6	2	8.6
. Drivers	4,000	2	8.0	2	8.0	3	12.0
. Guards (1 x 3 shifts)	2,200	3	6.6	3	6.6	3	6.6
. Servicemen	1,800	1	1.8	2	3.6	2	3.6
1st TOTAL	x	**15**	**77.8**	**20**	**100.2**	**21**	**104.2**
. Mechanicians	6,000	1	6.0	1	6.0	1	6.0
. Aid mechanicians	4,500	-	-	1	4.5	1	4.5
. Electricians	6,000	1	6.0	1	6.0	1	6.0
. Wareshousemen	4,100	1	4.1	2	8.2	2	8.2
. Boiler conductor	4,800	1	4.8	1	4.8	1	4.8
. Head cellar	7,500	1	7.5	1	7.5	1	7.5
. Cellar's labour	4,000	2	8.0	2	8.0	2	8.0
. Head bottling	7,500	1	7.5	1	7.5	1	7.5
. Bottling labour (mainly women)	1,500	7	10.5	10	15.0	15	22.5
. Wine-making labour	4,400	3	13.2	4	17.6	4	17.6
. Refrigeration -filtration labour	4,400	1	4.4	1	4.4	1	4.4
. Forklift operators	3,700	1	3.7	2	7.4	2	7.4
. Labour for various services	1,800	6	10.8	9	16.2	12	21.6
. Seasonal labour (2 months)	300	6	1.8	7	2.1	8	2.4
2nd TOTAL	x	**32**	**88.3**	**43**	**115.2**	**52**	**128.4**
TOTAL	x	**47**	**166.1**	**63**	**215.4**	**73**	**232.6**
TOTAL INCL. CONTINGENCIES 10%	x	**(47)**	**182.7**	**(63)**	**236.9**	**(73)**	**255.9**

(1) Including fringe benefits and other indirect social charges

Tab. 3 - NEW WINERY: PERSONNEL AND RELATED COST - 1990, 1995, 2000

(in 000 B., at XI/1985 prices)

QUALIFICATION	AVERAGE YEARLY SALARY (2)	1990		1995		2000	
		N	Cost	N	Cost	N	Cost
. Manager	18,000	1	18.0	1	18.0	1	18.0
. Administration manager	7,500	1	7.5	1	7.5	1	7.5
. Sales manager	7,000	1	7.0	1	7.0	1	7.0
. Enothecnicians	7,000	2	14.0	3	21.0	4	28.0
. Analysts	7,000	1	7.0	1	7.0	1	7.0
. Aid analysts	5,000	-	-	1	5.0	2	10.0
. Accountants	5,000	1	5.0	2	10.0	2	10.0
. Clerks (incl. for sales)	4,300	4	17.2	5	21.5	6	25.8
. Secretaries-typists	4,300	2	8.6	3	12.9	4	17.2
. Drivers	4,000	2	8.0	4	16.0	4	16.0
. Guards (1 x 3 shift)	2,200	3	6.6	3	6.6	3	6.6
. Servicemen	1,800	2	3.6	3	5.4	4	7.2
1st TOTAL	x	**20**	**102.5**	**28**	**137.9**	**33**	**160.3**
. Mechanicians	6,000	2	12.0	3	18.0	3	18.0
. Aid mechanicians	4,500	2	9.0	3	13.5	4	18.0
. Electricians	6,000	2	12.0	2	12.0	3	18.0
. Warehousemen	4,100	2	8.2	3	12.3	4	16.4
. Boiler conductors	4,800	1	4.8	2	9.6	2	9.6
. Head cellar	7,500	1	7.5	2	15.0	2	15.0
. Cellar labour	4,000	3	12.0	6	24.0	9	36.0
. Head bottling	7,500	1	7.5	1	7.5	1	7.5
. Bottling labour (mainly women)	1,500	17	25.5	30	45.0	37	55.5
. Wine-making labour	4,400	6	26.4	9	39.6	12	52.8
. Refrigeration-filtration labour	4,400	2	8.8	3	13.2	4	17.6
. Forklift operators	3,700	2	7.4	3	11.1	3	11.1
. Various labour (unskilled)	1,800	15	27.0	26	46.8	34	61.2
. Seasonal labour (2 months)	300	8	2.4	18	5.4	25	7.5
2nd TOTAL	x	**64**	**170.5**	**111**	**273.0**	**143**	**344.2**
TOTAL	x	**84**	**273.0**	**139**	**410.9**	**176**	**504.5**
TOTAL INCL. CONTINGENCIES 10%	x	**(84)**	**300.3**	**(139)**	**452.0**	**(176)**	**555.0**

(1) Including fringe benefits and other indirect social charges

N.B Plant modular enlargements are foreseen in 1991, 1994 and 1998. A second shift for some sectors, but only in peak period, is possible starting from 1996 - 1997.

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ANNEX 15

ANNUAL MAINTENANCE COSTS OF THE PROJECT CAPITAL GOODS

1987 - 2000

Table 1 - ANNUAL MAINTENANCE COST OF THE PROJECT CAPITAL GOODS - 1987 - 2000

(in 000 B, at XI/1985 prices)

CAPITAL GOODS	INVEST. COST	% (1)	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
NEW INVESTMENTS	4,696.5	1.5	-	-	70.4	70.4	70.4	70.4	70.4	70.4	70.4	70.4	70.4	70.4	70.4	70.4
Buildings (New Plant)																
Machinery and equipment	18,917.0	-	-	348.2	678.2	678.2	678.2	686.4	686.4	695.0	703.1	703.1	711.7	711.7	728.5	728.5
. Supplied temporarely to Makenissa Winery (2)	2,979.8	5.0	-	149.0	149.0	149.0	149.0	149.0	149.0	149.0	149.0	149.0	149.0	149.0	149.0	149.0
. Directly supplied to New Plant	7,424.9	4.5	-	-	334.1	334.1	334.1	334.1	334.1	334.1	334.1	334.1	334.1	334.1	334.1	334.1
. For modular enlargement of New Plant (2 x 8,172)	2,451.6	1.0	-	-	-	-	-	8.2	8.2	8.2	16.3	16.3	16.3	16.3	24.5	24.5
. Lideta Winery	1,992.6	4.0	-	79.7	79.7	79.7	79.7	79.7	79.7	79.7	79.7	79.7	79.7	79.7	79.7	79.7
. Asmara Factory	2,669.9	4.0	-	106.8	106.8	106.8	106.8	106.8	106.8	106.8	106.8	106.8	106.8	106.8	106.8	106.8
. Makanissa Winery (3)	636.5	2.0	-	12.7	-	-	-	-	-	-	-	-	-	-	-	-
. Mustrie Centres (n. 4 of 190,4 each)	761.7	4.5	-	-	8.6	8.6	8.6	8.6	8.6	17.2	17.2	17.2	25.8	25.8	34.4	34.4
Vehicles	979.9	-	-	43.7	98.0	98.0	98.0	98.0	98.0	98.0	98.0	98.0	98.0	98.0	98.0	98.0
. New Plant	543.6	10	-	-	54.3	54.3	54.3	54.3	54.3	54.3	54.3	54.3	54.3	54.3	54.3	54.3
. Lideta and Asmara Factories	437.5	10	-	43.7	43.7	43.7	43.7	43.7	43.7	43.7	43.7	43.7	43.7	43.7	43.7	43.7
Non technologic equipment	619.3	-	-	7.2	18.1	18.1	18.1	18.1	18.1	18.1	18.1	18.1	18.1	18.1	18.1	18.1
. New Plant	363.6	3.0	-	-	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9
. Lideta and Asmara Factories	240.7	3.0	-	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2
. Makanissa Winery	15.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL COST (new investments)	25,212.7	X	-	399.1	864.7	864.7	864.7	872.9	872.9	881.5	889.6	889.6	898.2	898.2	915.0	915.0
EXISTING CAPITAL GOODS (4)																
Lideta Winery	1,800.0 (2,400.0)	-	-	42.0	42.0	42.0	42.0	54.0	54.0	54.0	54.0	54.0	54.0	54.0	54.0	54.0
. Buildings, estimated residual value	1,200.0	1.5	-	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0
. Equipment, estimated residual value	600.0	4.0	-	24.0	24.0	24.0	24.0	(6)	-	-	-	-	-	-	-	-
.. Current value of replaced equipment	(1,200.0)	(3.0)	-	-	-	-	-	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0
Makanissa Winery																
. Equipment, estimated residual value (5)	100.0	2.5	-	2.5	-	-	-	-	-	-	-	-	-	-	-	-
Asmara Factory	500.0 (800.0)	-	-	15.2	15.2	15.2	15.2	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7
. Buildings, estimated residual value	350.0	1.5	-	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2
. Equipment	250.0	4.0	-	10.0	10.0	10.0	10.0	(6)	-	-	-	-	-	-	-	-
.. Current value of replaced equipment	(450.0)	(3.0)	-	-	-	-	-	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5
TOTAL COST (existing goods)	2,500.0 (3,300.0)	-	-	59.7	57.2	57.2	57.2	72.7	72.7	72.7	72.7	72.7	72.7	72.7	72.7	72.7
T O T A L	-	-	-	458.8	921.9	921.9	921.9	945.6	945.6	954.2	962.3	962.3	970.9	970.9	987.7	987.7

(1) Average parameter, taking into account the composition of goods (technical average life, engines, vats, etc.).

(2) Transferred to New Plant at the end of 1988 (according assumed time schedule).

(3) Additional new equipment supplied to the factory, utilized only in 1987 and 1988.

(4) Annual ordinary maintenance, starting from the 2nd project year (1988), after repair and extra maintenance works, foreseen by the project for the first year (1987) (see specific items in investment costs).

(5) Strictly necessary maintenance during 1988.

(6) Replacement for a total of 1,650,000 B in 1992 (see Tab. 1, Annex 16).

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ANNEX 16

ANNUAL DEPRECIATION AND FINANCIAL AMORTIZATION OF THE PROJECT INVESTMENT COSTS

- PERIODIC REPLACEMENT OF THE RENEWABLE CAPITAL GOODS -

- RESIDUAL VALUE -

Tab. 1 - ANNUAL DEPRECIATION AND FINANCIAL AMORTIZATION OF THE PROJECT INVESTMENT COSTS - PERIODIC REPLACEMENT OF THE RENEWABLE CAPITAL GOODS - RESIDUAL VALUE

(in 000 B, at XI/1985 prices)

	INVEST-MENT COSTS	AV.LIFE TIME (Years)	YEARLY INSTAL-MENTS	YEARS OF RENEWAL (1)	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	RESIDUAL VALUE
BUILDINGS (New Plant)	4,696.5	50	93.9	-	-	93.9	93.9	93.9	93.9	93.9	93.9	93.9	93.9	93.9	93.9	93.9	93.9	-
MACHINERY AND EQUIPMENT, INCL. ANCILLARY	18,280.5	(10.2)	1,786.0	-	829.3	1,547.1	1,547.1	1,547.1	1,588.0	1,588.0	1,607.1	1,648.0	1,648.0	1,667.0	1,667.0	1,727.0	1,727.0	8,729.3
NEW PLANT	12,856.3	x	x	-	318.1	1,016.9	1,016.9	1,016.9	1,057.8	1,057.8	1,057.8	1,098.7	1,098.7	1,098.7	1,098.7	1,139.6	1,139.6	6,443.5
. Equipment supplied to Makanissa Winery in the 1st year (1987)	2,979.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
.. with short technical life (2)	1,339.8	7	191.4	1994	191.4	191.4	191.4	191.4	191.4	191.4	191.4	191.4	191.4	191.4	191.4	191.4	191.4	191.4
.. with average technical life	894.0	10	89.4	1997	89.4	89.4	89.4	89.4	89.4	89.4	89.4	89.4	89.4	89.4	89.4	89.4	89.4	625.8
.. with long technical life	746.0	20	37.3	(2007)	37.3	37.3	37.3	37.3	37.3	37.3	37.3	37.3	37.3	37.3	37.3	37.3	37.3	261.1
. Equipment directly supplied to the New Plant, in the 2nd year (1988)	7,424.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
.. with short technical life	2,450.9	7	350.1	1995	-	350.1	350.1	350.1	350.1	350.1	350.1	350.1	350.1	350.1	350.1	350.1	350.1	700.2
.. with average technical life	2,000.0	10	200.0	1998	-	200.0	200.0	200.0	200.0	200.0	200.0	200.0	200.0	200.0	200.0	200.0	200.0	1,600.0
.. with long technical life	2,974.0	20	148.7	(2008)	-	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7	148.7	1,189.6
. Enlargement (2nd, 3rd and 4th module) (long life)	2,451.6	20	40.9	x	-	-	-	-	40.9	40.9	40.9	81.8	81.8	81.8	81.8	122.7	122.7	1,875.4
AWASH LIDETA WINERY	1,992.6	x	x	-	231.9	231.9	231.9	231.9	231.9	231.9	231.9	231.9	231.9	231.9	231.9	231.9	231.9	770.1
. Equipment with short technical life	995.6	7	142.2	1994	142.2	142.2	142.2	142.2	142.2	142.2	142.2	142.2	142.2	142.2	142.2	142.2	142.2	142.2
. Equipment with average technical life	797.0	10	79.7	1997	79.7	79.7	79.7	79.7	79.7	79.7	79.7	79.7	79.7	79.7	79.7	79.7	79.7	557.9
. Equipment with long technical life	200.0	20	10.0	(2007)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	70.0
ASMARA WINE FACTORY	2,669.0	x	x	-	279.3	279.3	279.3	279.3	279.3	279.3	279.3	279.3	279.3	279.3	279.3	279.3	279.3	1,040.7
. Equipment with short technical life	1,066.9	7	152.4	1994	152.4	152.4	152.4	152.4	152.4	152.4	152.4	152.4	152.4	152.4	152.4	152.4	152.4	152.4
. Equipment with average technical life	935.0	10	93.5	1997	93.5	93.5	93.5	93.5	93.5	93.5	93.5	93.5	93.5	93.5	93.5	93.5	93.5	654.5
. Equipment with long technical life	668.0	20	33.4	(2007)	33.4	33.4	33.4	33.4	33.4	33.4	33.4	33.4	33.4	33.4	33.4	33.4	33.4	233.8
RUSTING CENTRES (n. 4)	761.7	10	x	-	-	19.0	19.0	19.0	19.0	19.0	38.1	38.1	38.1	57.1	57.1	76.2	76.2	475.0
. Equipment with average technical life (190.42 each)	761.7	10	x	1/1998	-	19.0	19.0	19.0	19.0	19.0	38.1	38.1	38.1	57.1	57.1	76.2	76.2	475.0
VEHICLES	979.9	6(3)	x	-	-	72.9	163.3	163.3	163.3	163.3	163.3	163.3	163.3	163.3	163.3	163.3	163.3	364.6
. New Plant,1st module	542.4	6	90.4	1994,2000	-	90.4	90.4	90.4	90.4	90.4	90.4	90.4	90.4	90.4	90.4	90.4	90.4	-
. Awash Lideta and Asmara Factories	437.5	6	72.9	1993,1999	-	72.9	72.9	72.9	72.9	72.9	72.9	72.9	72.9	72.9	72.9	72.9	72.9	364.6
NON TECHNOLOGIC EQUIPMENT	604.2	10	x	-	24.1	60.4	60.4	60.4	60.4	60.4	60.4	60.4	60.4	60.4	60.4	60.4	60.4	459.3
. New Plant,1 st module	363.5	10	36.4	1998	-	36.3	36.3	36.3	36.3	36.3	36.3	36.3	36.3	36.3	36.3	36 3	36.3	290.5
. Awash Lideta and Asmara Factories	240.7	10	24.1	1997	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.1	168.8
1st TOTAL	24,561.1		x		926.3	1,864.7	1,864.7	1,864.7	1,905.6	1,905.6	1,924.7	1,965.6	1,965.6	1,584.6	1,984.6	2,044.6	2,044.6	9,553.2

(Continued)

(continued)

	INVEST-MENT COSTS	AV.LIFE TIME (Years)	YEARLY INSTAL-MENTS	YEARS OF RENEWAL (1)	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	RESIDUAL VALUE
EXISTING EQUIPMENT OF LIDETA AND ASMARA PLANTS, REPLACED (See Ann 15)	1,650.0	10	-	1992	-	-	-	-	-	165.0	165.0	165.0	165.0	165.0	165.0	165.0	165.0	330.0
2nd TOTAL (capital goods to be technically depreciated)	26,211.1	x	x	x	926.3	1,864.7	1,864.7	1,864.7	1,905.6	2,070.6	2,089.7	2,130.6	2,130.6	2,149.5	2,149.6	2,209.6	2,209.6	9,883.2
FINANCIAL AMORTIZATION OF THE REMAINING INVESTMENT COSTS																		
. New Plant: area settlement and other civil works	527.3	10	52.7	-	52.7	52.7	52.7	52.7	52.7	52.7	52.7	52.7	52.7	52.7	-	-	-	-
. Awash Lideta Winery: interventions on external areas and existing buildings; repair of existing equipment	423.5	10	42.3	-	42.3	42.3	42.3	42.3	42.3	42.3	42.3	42.3	42.3	42.3	-	-	-	-
. Asmara Wine Factory (do.)	256.0	10	25.6	-	25.6	25.6	25.6	25.6	25.6	25.6	25.6	25.6	25.6	25.6	-	-	-	-
. Awash Nakanissa Winery: all costs	837.4	10	84.1	-	84.1	84.1	84.1	84.1	84.1	84.1	84.1	84.1	84.1	84.1	-	-	-	-
. Cost for equipment exchanges between wineries	270.0	10	27.0	-	-	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	-	-	-
. Technical Assistance	294.0	10	29.4	-	-	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	-	-	-
. Training of Ethiopian personnel	52.9	10	2.0	-	-	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	-	-	-
. Preliminary and organizational expenses (4)	140.0	10	14.0	-	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	-	-	-	-
. Spare parts	1,591.2	10	x	-	87.0	159.1	159.1	159.1	159.1	159.1	159.1	159.1	159.1	159.1	72.3	-	-	-
3rd TOTAL	4,392.3	10	x	-	305.7	436.2	436.2	436.2	436.2	436.2	436.2	436.2	436.2	436.2	130.7	-	-	-
T O T A L	30,603.4	x	x	-	1,232.0	2,300.9	2,300.9	2,300.9	2,341.8	2,341.8	2,360.9	2,401.8	2,401.8	2,420.8	2,115.3	2,044.6	2,044.6	9,883.2
CAPITAL GOODS TO BE RENEWED DURING THE PROJECTED PERIOD (1988 - 2000)																		
Equipment	12,319.6																	
. Temporarely supplied to Nakanissa Winery:																		
.. at short life	1,339.8	7									1,339.8							
.. at average life	894.0	10												894.0				
. New Plant : at short life	2,450.9	7										2,450.9						
at average life	2,000.0	10													2,000.0			
. Awash Lideta Winery:																		
.. at short life	995.6	7									995.6							
.. at average life	797.0	10												797.0				

(Continued)

(Continued)

	INVESTMENT COSTS	AV.LIFE TIME (Years)	YEARLY INSTALMENTS	YEARS OF RENEWAL (1)	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	RESIDUAL VALUE
. Asmara Factory :																		
.. at short life	1,066.9	7									1,066.9							
.. at average life	935.0	10												935.0				
. Wasting Centres:																		
.. at average life (1st Centre)	190.4	10													190.4			
. Replacement of existing equipment (see tab.1, Ann. 15)	1,650.0	10							1,650.0									
Non technologic equipment (Office, etc.)	604.3																	
. New Plant:	363.6	10													363.6			
. Awash Lideta and Asmara Wineries	240.7	10												240.7				
Vehicles	979.9																	
. New Plant	542.4	6									542.4						542.4	
. Awash Lideta and Asmara Wineries	437.5	6								437.5						437.5		
TOTAL	**13,903.8**	x	x	-	-	-	-	-	**1,650.0**	**437.5**	**3,944.7**	**2,450.9**	-	**2,866.7**	**2,554.0**	**437.5**	**542.4**	x
= Σ	**14,883.7**																	

(1) See second section of this table

(2) As to regard the break down of the capital goods according to their average technic-economic life: see main text

(3) Weighted average technical life of forklifts and pallets (8) and cars/trucks (5)

(4) These expenses are assumed to be carried out before starting of the project implementation (1985, 1986). For simplicity sake amortization starts here from 1988

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ANNEX 17

PROJECT CONSOLIDATED OPERATING COSTS WITH BREAKDOWN BETWEEN COSTS IN LOCAL MONEY AND IN FOREIGN CURRENCY

1990, 1995 AND 2000

Tab. 1 - PROJECT CONSOLIDATED OPERATING COSTS WITH BREAK DOWN BETWEEN COSTS IN LOCAL MONEY AND IN FOREIGN CURRENCY- 1990, 1995 and 2000 (1)

(in 000 B, at XI/1985 prices)

ITEMS	1990			1995			2000		
	L.M.	F.C.	TOTAL	L.M.	F.C.	TOTAL	L.M.	F.C.	TOTAL
. Fresh grape	4,654.0	-	4,654.0	7,584.3	-	7,584.3	8,100.0	-	8,100.0
. Dry raisin (100% imp.)	824.3	1,403.6	2,227.9	1,131.3	1,926.4	3,057.7	1,366.6	2,326.8	3,693.4
. Sugar	2,568,6	-	2,568.6	3,525.4	-	3,525.4	4,258.3	-	4,258.3
. Chemical products (90% imp.)	291.2	560.0	851.2	404.6	785.0	1,189.6	489.6	950.0	1,439.6
. Bottles	5,531.9	-	5,531.9	8,989.7	-	8,989.7	11,081.7	-	11,081.7
. Corks, capsules, crown, labels (25% imp.)	3,057.9	626.0	3,683.9	4,496.9	921.0	5,417.9	5,479.9	1,122.0	6,601.9
. Cardboard boxes (for export)	240.7	-	240.7	480.9	-	480.9	605.0	-	605.0
. Plastic boxes	2,265,2	-	2,265.2	3,109.4	-	3,109.4	3,754.8	-	3,754.8
. Electricity and water	337.5	-	337.5	487.9	-	487.9	593.2	-	593.2
. Fuel and oil	315.7	-	315.7	455.0	-	455.0	551.3	-	551.3
. Other consumption products (60% imp.)	159.0	105.0	264.0	223.4	149.0	372.4	258.0	172.0	430.0
. Personnel	782.3	-	782.3	1,096.5	-	1,096.5	1,244.5	-	1,244.5
. Overheads(prod , adm.)	889.6	100.0	989.6	1,269.6	140.0	1,409.6	1,340.0	150.0	1,490.0
. Maintenance (2)	441.9	480.0	921.9	462.3	500.0	962.3	473.7	514.0	987.7
. Sales and distribution costs	2,631,0	-	2,631.0	3,598.0	-	3,598.0	4,300.0	-	4,300.0
. Other costs, contingencies (3)	1,102.8	275.0	1,377.8	1,628.4	407.0	2,035.4	1,921,8	480.0	2,401.8
TOTAL	**26,093.6**	**3,549.6**	**29,643.2**	**38,943.6**	**4,828.4**	**43,772.0**	**45,818.4**	**5,714.8 (4)**	**51,533.2**

(1) Value in foreign currency corresponds to CIF - Value; value in local money includes custom duties, land costs, transport etc. Purchases of locally available goods or services are here considered expenses in local money, regardless of their foreign origin.

(2) According to standard parameters:60%original spare parts; 30% other material; 10% personnel (mainly external).

(3) Estimate (proportional).

(4) Equal to 11.2% of total costs.

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ANNEX 18

PRODUCTION COST PER UNIT

Tab. 1 - PRODUCTION COST PER UNIT (LITRE WINE)

(in 000 Birr at XI/1985 prices)

DESCRIPTION	1990	1995	2000
PLANNED TOTAL WINE PRODUCTION (hl)	**165,300**	**239,200**	**290,900**
COSTS	(000 B)	(000 B)	(000 B)
. Raw and auxiliary material	10,301.7	15,357.0	17,491.3
. Packaging material	11,721.7	17,997.9	22,043.4
. Utilities	337.5	487.9	593.2
. Fuel and oil	315.7	455.0	551.3
. Other consumption products	264.0	372.4	430.0
. Direct labour	380.0	474.3	522.5
. Production overheads	407.2	584.6	626.6
. Maintenance	921.9	962.3	987.7
TOTAL PRODUCTION COSTS	**24,649.7**	**36,691.4**	**43,246.0**
Production cost per unit (B/litre)	(1.49)	(1.53)	(1.49)
. Indirect labour	402.3	622.2	722.0
. Administrative overheads	582.4	825.0	863.4
. Sales and distribution costs	2,631.0	3,598.0	4,300.0
OPERATING COSTS: 1st TOTAL	**28,265.4**	**41,736.6**	**49,131.4**
Operating cost per unit (B/litre)	(1.71)	(1.74)	(1.69)
. Indivisible costs and contingencies	1,377.8	2,035.4	2,401.8
OPERATING COSTS: 2nd TOTAL	**29,643.2**	**43,772.0**	**51,533.2**
Operating cost per unit (B/litre)	(1.79)	(1.83)	(1.77)
. Depreciation	2,300.9	2,401.8	2,044.6
TOTAL OPERATING COSTS	**31,944.1**	**46,173.8**	**53,577.8**
Operating cost per unit (B/litre)	(1.93)	(1.93)	(1.84)

ANNEX 19

DEVELOPMENT OF WINE SALES - 1987-2000

Table 1 - DEVELOPMENT OF WINE SALES - 1987 - 2000

(at XI/1985 constant prices)

YEAR	PROGRAMMED SALES (average-high hypothesis)			EXPORTS (wine from fresh grape) (1)								DOMESTIC SALES					
	WINE FROM FRESH GRAPE (Hl)	WINE FROM DRY RAISIN (Hl)	TOTAL (Hl)	1st QUALITY				2nd QUALITY				TOTAL VALUE	WINE FROM FRESH GRAPE (not exported)			1st CLASS DRY RAISIN WINE		
				Hl	Unit Price per litre		Value (000 B.)	Hl	Unit Price per litre		Value (000 B.)		Hl	Unit Price (B/l)	Value (000 B.)	Hl (3)	Unit Price (B/l)	Value (000 B.)
					US$	B.			US$	B.								
1987	5,825(1)	104,175	110,000(2)	2,400	1.20	2.484	596.2	1,600	0.80	1.656	265.0	861.2	1,825	5.33 (4.00)	973.3	1,040	4.66 (3.50)	485.3
1988	9,445(1)	123,955	133,400	3,780	1.20	2.484	939.0	2,520	0.80	1.656	417.3	1,356.3	3,145	5.33 (4.00)	1,677.3	1,365	4.66	637.0
1989	13,100	134,800	147,900	5,340	1.50	3.105	1,658.1	3,560	1.00	2.07	736.9	2,395.0	4,200	6.00 (4.50)	2,520.0	1,890	4.66	882.0
1990	19,690	145,610	165,300	8,100	1.50	3.105	2,515.1	5,400	1.00	2.07	1,117.8	3,632.9	6,190	6.00	3,714.0	2,475	4.66	1,155.0
1991	24,640	158,460	183,100	10,740	1.50	3.105	3,334.8	7,160	1.00	2.07	1,482.1	4,816.9	6,740	6.00	4,044.0	3,170	4.66	1,480.0
1992	28,850	169,350	198,200	12,300	1.50	3.105	3,819.2	8,200	1.00	2.07	1,697.4	5,516.6	8,350	6.00	5,010.0	4,060	4.66	1,894.6
1993	32,615	180,985	213,600	14,460	1.50	3.105	4,489.8	9,640	1.00	2.07	1,995.5	6,485.3	8,515	6.00	5,109.0	5,070	4.66	2,366.0
1994	36,300	190,500	226,800	16,080	1.50	3.105	4,992.8	10,720	1.00	2.07	2,219.0	7,211.8	9,500	6.00	5,700.0	6,290	4.66	2,935.3
1995	39,350	199,850	239,200	17,700	1.50	3.105	5,495.9	11,800	1.00	2.07	2,442.6	7,938.5	9,850	6.00	5,910.0	7,590	4.66	3,542.0
1996	41,770	208,630	250,400	19,140	1.50	3.105	5,943.0	12,760	1.00	2.07	2,641.3	8,584.3	9,870	6.00	5,922.0	8,550	4.66	3,990.0
1997	44,190	216,710	260,900	20,400	1.50	3.105	6,334.2	13,600	1.00	2.07	2,815.2	9,194.4	10,190	6.00	6,114.0	9,320	4.66	4,349.4
1998	46,340	225,060	271,400	21,720	1.50	3.105	6,744.1	14,480	1.00	2.07	2,997.4	9,741.5	10,140	6.00	6,084.0	10,350	4.66	4,830.0
1999	48,125	233,175	281,300	22,920	1.50	3.105	7,116.7	15,280	1.00	2.07	3,163.0	10,279.7	9,925	6.00	5,955.0	11,190	4.66	5,222.0
2000	49,500	241,400	290,900	24,000	1.50	3.105	7,452.0	16,000	1.00	2.07	3,312.0	10,764.0	9,500	6.00	5,700.0	12,070	4.66	5,632.7

(1) It was assumed that in the years during the renabilitation of the existing wineries and New Plant erection (1987-88), the exported wine will be made with fresh grape and dry raisin. Therefore also the unit sale prices will be lower.

(2) Lower that the potential demand, estimated at 120,500 hl.

(3) Starting from the present distribution scheme (about 1% of total sales) with a progressive increase up to 5% in the year 2000.

(at XI/1985 constant prices)

YEAR	DOMESTIC SALES									TOTAL VALUE (dom) (000 B.)	TOTAL VALUE (receipts for total sales) (000 B.)	SALES OF BY PRODUCTS (1.5% of wine sales (000 B.)	TOTAL RECEIPTS (000 B.)	I.N. 100=1987
	2nd CLASS DRY RAISIN WINE			3rd CLASS DRY RAISIN WINE			4th CLASS DRY RAISIN WINE							
	Hl (4)	Unit Price (B/l)	Value (000 B.)	Hl (5)	Unit Price (B/l)	Value (000 B.)	Hl (6)	Unit Price (B/l)	Value (000 B.)					
1987	5,210	3.33 (2.50)	1,736.7	9,375	2.66 (2.00)	2,500.0	88,550	1.733 (1.30)	15,348.6	21,043.9	21,905.1	328.6	22,233.7	100.0
1988	6,320	3.33	2,106.7	11,650	2.66	3,106.7	104,620	1.733	18,134.1	25,661.8	27,018.1	405.3	27,423.4	123.3
1989	7,280	3.33	2,426.7	13,210	2.66	3,522.7	112,420	1.733	19,486.1	28,837.5	31,232.5	468.5	31,701.0	142.6
1990	8,300	3.33	2,766.7	15,290	2.66	4,077.3	119,545	1.733	20,721.1	32,434.1	36,067.0	541.0	36,608.0	164.7
1991	9,665	3.33	3,221.7	17,115	2.66	4,564.0	128,510	1.733	22,275.0	35,584.7	40,401.6	606.0	41,007.6	184.4
1992	11,180	3.33	3,726.7	19,480	2.66	5,194.7	134,630	1.733	23,335.8	39,161.8	44,678.4	670.2	45,348.6	204.0
1993	13,210	3.33	4,403.3	22,080	2.66	5,888.0	140,625	1.733	24,375.0	42,141.3	48,626.6	729.4	49,356.0	222.0
1994	14,670	3.33	4,890.0	24,380	2.66	6,502.0	145,160	1.733	25,161.0	45,188.3	52,400.1	786.0	53,186.1	239.2
1995	16,790	3.33	5,596.7	26,580	2.66	7,088.0	148,890	1.733	25,807.6	47,944.3	55,882.8	838.2	56,721.0	255.1
1996	18,780	3.33	6,260.0	28,580	2.66	7,621.3	152,720	1.733	26,471.4	50,264.7	58,849.0	882.7	59,731.7	268.7
1997	20,150	3.33	6,716.7	30,560	2.66	8,149.3	156,680	1.733	27,157.8	52,487.2	61,681.6	925.2	62,606.8	281.6
1998	21,610	3.33	7,203.3	32,410	2.66	8,642.7	160,690	1.733	27,852.9	54,612.9	64,354.4	965.3	65,319.7	293.8
1999	22,850	3.33	7,616.7	34,275	2.66	9,140.0	164,860	1.733	28,575.7	56,509.4	66,789.1	1,001.8	67,790.9	304.9
2000	24,140	3.33	8,046.7	36,210	2.66	9,656.0	168,980	1.733	29,289.3	58,324.7	69,088.7	1,036.3	70,125.0	315.4

(4) From 5% to 10% of total sales.

(5) From 9% to 15% of total sales.

(6) From 85% (1985-90%), with a progressive decrease to about 70%.

N.B a) For wine production and export, see Tab. 11, Chapter 3

b) Unit price: into brackets = unit price per bottle of 0.750 l.

ANNEX 29

PROJECTION OF DOMESTIC SALES OF DRY RAISIN WINE

BY CLASSES OF PRICE

Table 1 - PROJECTION OF DOMESTIC SALES OF DRY RAISIN WINE BY CLASSES OF PRICE

(Value in Birr per bottle of 0.750 l., at XI/1985 constant prices)

YEAR	TOTAL DRY RAISIN WINE (1) (Hl)	1st CLASS (3.50 B.)		2nd CLASS (2.50 B.)		3rd CLASS (2.00 B.)		4th CLASS (1.30 B.)	
		%	Hl	%	Hl	%	Hl	%	Hl
1987	104,175	1.0	1,040	5.0	5,210	9.0	9,375	85.0	83,550
1988	123,955	1.1	1,365	5.1	6,320	9.4	11,650	84.4	104,620
1989	134,800	1.4	1,890	5.4	7,280	9.8	13,210	83.4	112,420
1990	145,610	1.7	2,475	5.7	8,300	10.5	15,290	82.1	119,545
1991	158,460	2.0	3,170	6.1	9,665	10.8	17,115	81.1	128,510
1992	169,350	2.4	4,060	6.6	11,180	11.5	19,480	79.5	134,630
1993	180,985	2.8	5,070	7.3	13,210	12.2	22,080	77.7	140,625
1994	190,500	3.3	6,290	7.7	14,670	12.8	24,380	76.2	145,160
1995	199,850	3.8	7,590	8.4	16,790	13.3	26,580	74.5	148,890
1996	208,630	4.1	8.550	9.0	18,780	13.7	22,580	73.2	152,720
1997	216,710	4.3	9,320	9.3	20,150	14.1	30,560	72.3	156,680
1998	225,060	4.6	10,350	9.6	21,610	14.4	32,410	71.4	160,690
1999	233,175	4.8	11,190	9.8	22,850	14.7	34,275	70.7	164.860
2000	241,400	5.0	12,070	10.0	24,140	15.0	36,210	70.0	168,980

(1) See Tab. 10, Chapter 3.

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ANNEX 21

CONSOLIDATED PROJECT COST/PROFIT

SENSITIVITY ANALYSIS

Tab. 1 - CONSOLIDATED PROJECT COST/PROFIT SENSITIVITY ANALYSIS

(in 000 B at XI/1985 prices)

DESCRIPTION	1990	1995	2000
Income (receipts); unvaried	36,608.0	56,721.0	70,125.0
Total costs, before depreciation: + 10%	32,607.5	48,149.2	56,686.5
Gross profit	**4,000.5**	**8,571.8**	**13,438.5**
% of receipts	**10.9**	**15.1**	**19.2**
Income (receipts): unvaried	36,608.0	56,721.0	70,125.0
Total costs, including depreciation: + 10%	35,138.5	50,791.2	58,935.6
Gross profit	**1,496,5**	**5,929.8**	**11,189.4**
% of receipts	**4.0**	**10.5**	**16.0**
Income (receipts): - 10%	32,947.2	51,048.9	63,112.5
Total costs, including depreciation: unvaried	31,944.1	46,173.8	53,577.8
Gross profit	**1,003.1**	**4,875.1**	**9,534.7**
% of receipts	**3.0**	**9.5**	**15.1**
Break-even point (linear system, profit 0)			
. Decrease of receipts (unvaried costs) (%)	- 12.7	- 18.6	- 23.6
. Increase of costs, incl. depreciation (unvaried receipts) (%)	+ 14.6	+ 22.8	+ 30.1

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ANNEX 22

FINANCIAL AND ECONOMIC COST OF THE INITIAL INVESTMENT

Tab. n. 1 - FINANCIAL AND ECONOMIC COST OF THE INITIAL INVESTMENT

(in 000 Birr, at XI/1985 prices)

I T E M S	FINANCIAL COST	ECONOMIC COST	CONVERSION PARAMETER (% of F.C.)
. AREAS SETTLEMENT AND OTHER CIVIL WORKS	608.1	474.3	78
. BUILDINGS	4,696.5	3,757.2	80
. INTERVENTIONS ON EXISTING BUILDINGS	633.5	494.1	78
. MACHINERY AND EQUIPMENT	18,917.0	17,592.8	93
. REPAIR AND EXTRA MAINTENANCE OF EXISTING EQUIPMENT	151.0	132.9	88
. VEHICLES (imp.)	979.9	744.7	76
. SPARE PARTS	1,591.2	1,432.1	90
. FURNITURE AND NON TECHNOLOGIC EQUIPMENT	619.3	538.8	87
. COSTS FOR EQUIPMENT EXCHANGES BETWEEN WINERIES	270.0	216.0	80
. TECHNICAL ASSISTANCE	294.0	279.3	95
. TRAINING	52.9	52.9	100
. PRELIMINARY	140.0	133.0	95
TOTAL	**28,953.4**	**25,848.1**	**89.3**