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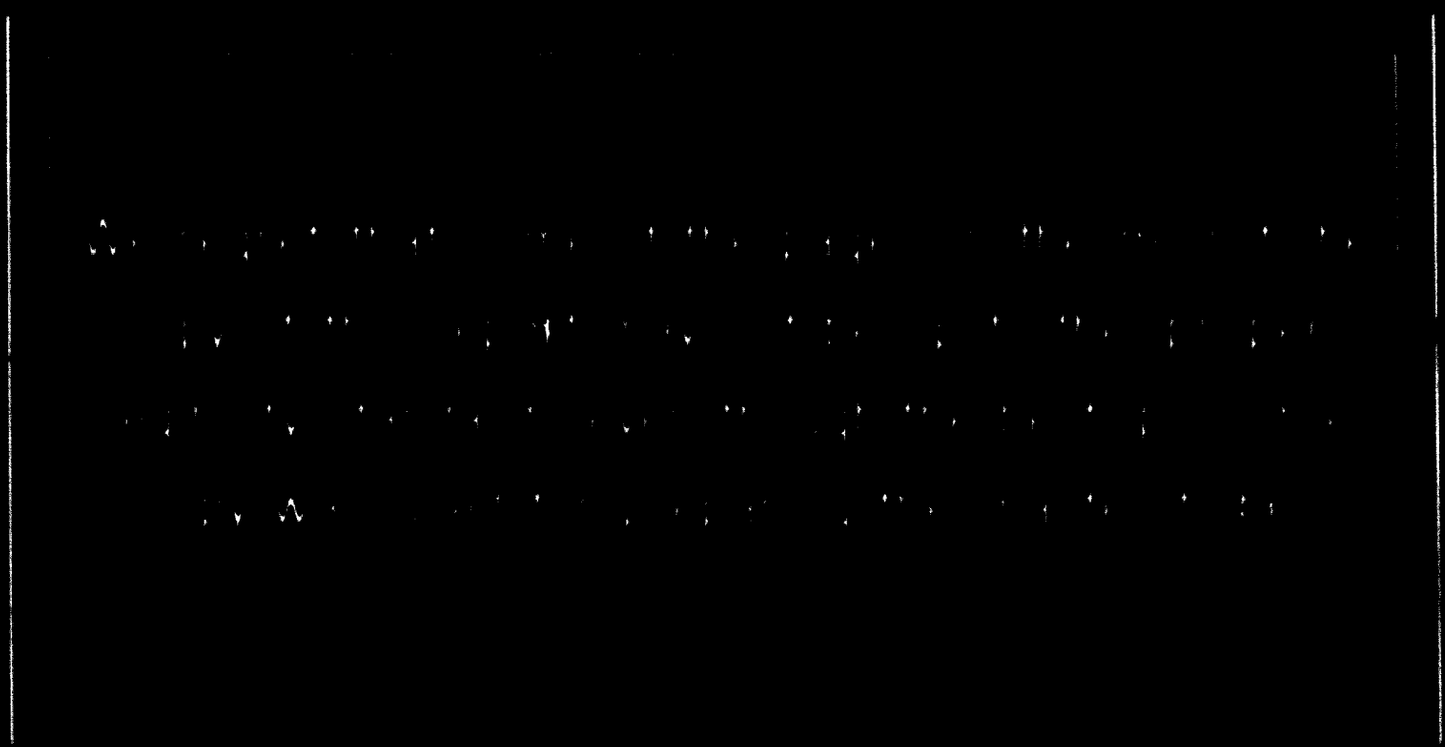

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ADVISORY SERVICES IN INDUSTRIAL PLANNING
DP/SYR/76/011

SYRIAN ARAB REPUBLIC

# Technical report: Financial and economic analysis of the fruit and vegetable canning plant at Hasakeh

Prepared for the Government of the Syrian Arab Republic
by the United Nations Industrial Development Organization,
executing agency for the United Nations Development Programme

Based on the work of H. Khouadja,
industrial development officer

United Nations Industrial Development Organization
Vienna

id. 77-7205

## Explanatory notes

References to dollars ($) are to United States dollars, unless otherwise stated.

The monetary unit in the Syrian Arab Republic is the Syrian pound (LS). During the period covered by the report (August 1977), the value of the Syrian pound in relation to the United States dollar was $US 1 = LS 3.90.

A full stop (.) is used to indicate decimals.

A comma (,) is used to distinguish thousands and millions.

References to "tons" are to metric tons, unless otherwise specified.

The following forms have been used in tables:

A dash (-) indicates that the amount is nil or negligible.

Parentheses around a figure indicate a minus amount (in tables only).

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## ABSTRACT

This is the report of a mission to the Syrian Arab Republic as part of the United Nations Development Programme (UNDP) project "Advisory services in industrial planning" (DP/SYR/76/011). The United Nations Industrial Development Organization (UNIDO), as executing agency, fielded a team of UNIDO staff members under the UNDP New Dimensions Programme.

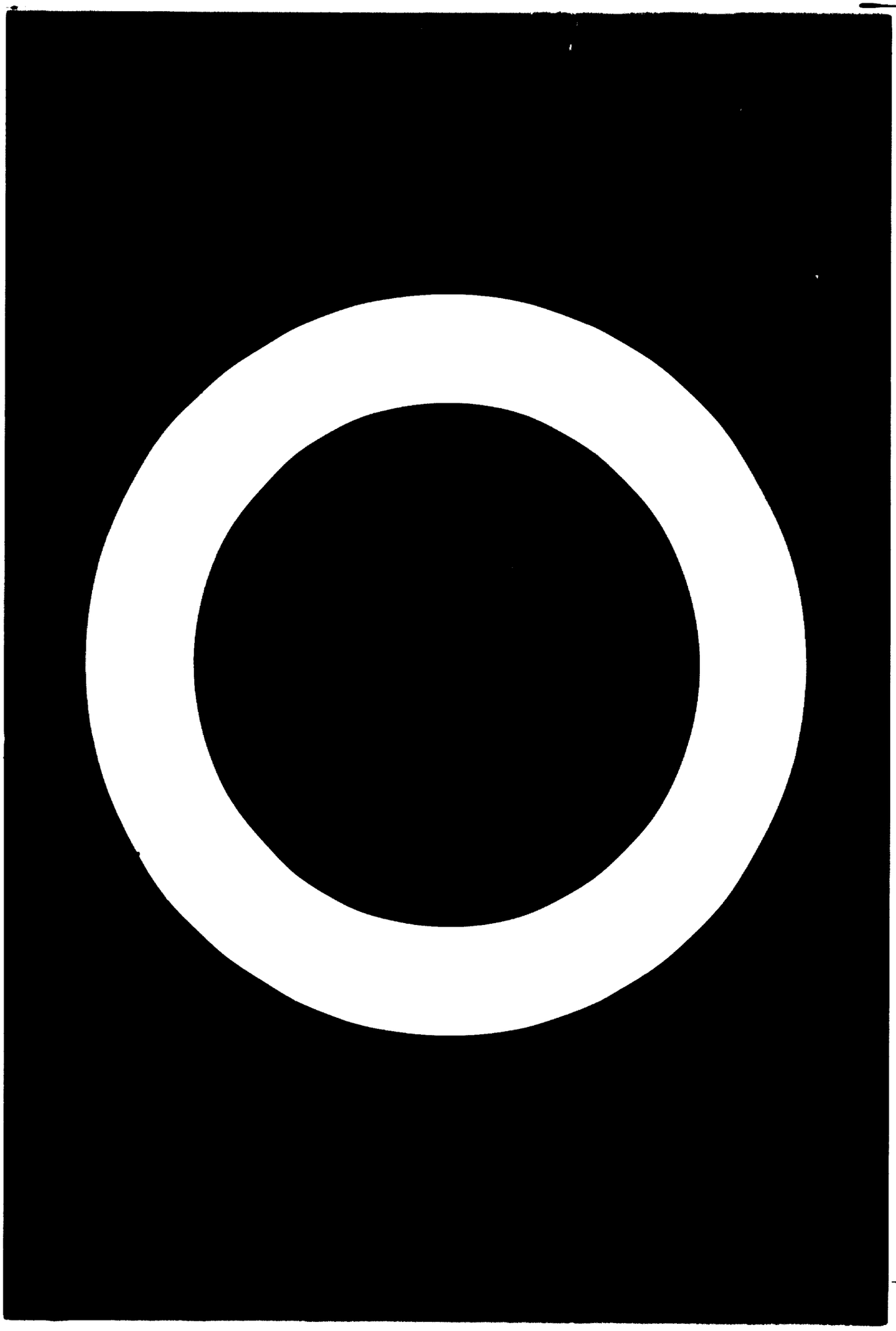
This mission report covers the financial and economic analysis of a proposed vegetable and fruit canning plant at Hasakeh. In full produotion, the plant will use 9,000 tons of tomatoes, 300 tons of peas, 250 tons of beans, and 230 tons of fruits. Cans and packaging material will have to be imported.

The internal rate of return of the project was found to be 8.95%, which is higher than the average 8.4% interest rates on the loans that finance the project. The financial performanoe would be improved by increasing the volume of processing.

The project will encourage local farmers to increase their produotion of fruits and vegetables for sale, and will bring them an increased inoome. It was assumed that half of the plant's output would be exported, whioh would help the country's balanoe of payments.

It is reoommended that measures should be taken to ensure a steady supply of fruit and vegetables to the plant, spread out over as long a period as possible. A study should be made of the types and quantities of fresh fruits and vegetables in the Hasakeh area.

Finally, it is reoommended that the market potential of the plant's output in oountries neighbouring the Syrian Arab Republic should be studied in detail with a view to increasing exports.



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## INTRODUCTION

The Syrian Arab Republic is planning to expand its food processing industry by establishing three new canning plants. One of them is to be at Hasakeh on the Al-Khabour River in the north-eastern part of the country. With the new plants the Syrian Arab Republic will double its production of canned food (9,779 tons in 1975). Data taken from a contract for a similar project at Deir ez Zor were used in the financial and economic analysis of the Hasakeh canning plant.

# I. ANALYSIS

## A. Market analysis

### Raw materials

The Hasakeh plant will mainly be using tomatoes, beans, peas and, in smaller quantities, fruits. All these raw materials appear to be readily available, particularly when global production figures are considered. For instance, in 1975 the Syrian Arab Republic produced 375,000 tons of tomatoes, 56,000 tons of various beans, 3,600 tons of peas and 230,000 tons of fruits. In the Hasakeh area the only raw material produced in a fairly large quantity is the tomato: 16,000 tons were produced in 1975. This is more than the 9,000 tons to be used in the plant; however, nothing is known about the availability of the variety and quality of tomato required to produce a good tomato concentrate. This is true also of the other fresh vegetables and fruits to be processed by the plant.

The Hasakeh plant will have to import lacquered and printed cans to package its output. There should be no difficulty in obtaining this packaging from foreign suppliers.

### The market

The present market for canned products in the Syrian Arab Republic is about 5,000-6,000 tons per year. Of this total, peas account for 500-600 tons, and each of the following account for 1,500-2,000 tons: tomato concentrate; apricot; and all other products. In addition to the above quantities processed industrially, an unknown quantity of marmelade, jams and compotes is prepared privately at home. The demand for industrially processed products is expected to grow at the expense of home canning, as has been the case in other countries. A 10-15% annual growth rate is expected over the next five years (from 1977), raising the level of local consumption to approximately 10,000 tons by 1981-1982. In addition to the

local market, the Syrian Arab Republic was able in 1976 to export 569 tons of canned tomato and 1,700 tons of tinned fruit and vegetable. There appear to be good prospects for the Syrian Arab Republic to sell large quantities of canned products in neighbouring countries, particularly in the Gulf States and Saudi Arabia.

## B. Techno-economic analysis

### Proposed plant

The only documentation available for a techno-economic analysis is the contract signed between the Union of Food Industry (UNIFOOD) and the Hungarian firm Komplex for the erection of a canning plant in Deir es Zor. It was understood that the same contract would be applied to the Hasakeh project.

The decision to implement the project has been made and shipment of the equipment already started. The canning plant is due to start up in 1979 and is expected to produce the following quantities of finished goods:

| Product | Quantity (tons) |
|---|---|
| Tomato concentrate (36-38%) | 1,200 |
| Peas | 184.2 |
| Green beans | 154 |
| Broad beans | 256.5 |
| Compote of fruits | 58 |
| Confitures or jam | 255 |
| Total | 2,107.7 |

At a later stage, an additional 184.2 tons of canned peas would be produced, bringing the total production to 2,291.9 tons.

Standard technology is to be used in this plant. There will be a tomato line using a two-stage evaporation process for concentration, a green-peas line, as well as other equipment for the production of compotes and jams.

A staff of 85 persons will be required, 42 of which would be unskilled, 27 skilled, 9 in the supervisory category and 7 professional.

Investment estimates

The investment estimates were derived from the aforementioned contract, the total value of which amounted to $1,225,000 (LS 4,838,750).

The figures given in the contract are broken down into components such as equipment, supervision of installation, engineering and training. However, the rest of the investment, which comprises civil work, equipment supplied locally and installations for utilities, is given as a lump sum of LS 6 million. A breakdown of investment requirements, including working capital, is presented in table 1. Civil work, which includes production buildings, warehouses, roads and sewerage is estimated at LS 4 million. Other fixed assets include equipment supplied locally (lorries, cars), as well as steam boilers and electrical auxiliaries.

The working capital is calculated as follows:

| Item | Value ('000 LS) |
|---|---|
| Stock of raw materials (40% of total needs) | 914 |
| Tin-plate cans (30% of requirements) | 285 |
| Wages (3 months) | 186 |
| Utilities (2 months) | 20 |
| Ancillary materials (6 months) | 173 |
| Inventories (20% of finished product) | 1,308 |
| Total | 2,886 |

The above figures should be considered as annual averages. Due to the seasonality of operation, the working capital required during the peak season might be higher than indicated.

**Table 1. Plant investment and schedule of construction**

('000 LS)

| Items | 1976 | | 1977 | | 1978 | | Total |
|---|---|---|---|---|---|---|---|
| | Local | Imported | Local | Imported | Local | Imported | |
| **Fixed assets** | | | | | | | |
| Equipment | - | 868 | - | 2 000 | | 975 | 3 843 |
| Sea freight | - | - | - | 286 | | 98 | 384 |
| Transport to site | - | 230 | - | - | 116 | | 346 |
| Installation costs | - | 61 | - | - | 100 | 547 | 708 |
| Land | 300 | - | - | - | | | 300 |
| Civil work | - | | 2 000 | - | 2 000 | | 4 000 |
| Other fixed assets | - | - | - | - | | | |
| | | | | 800 | | 800 | 1 600 |
| **Preliminary expenses** | | | | | | | |
| Planning and studies | | 20 | 300 | 178 | 100 | | 598 |
| Training of personnel | | 19 | | 171 | | | 190 |
| **Contingencies** | | | 260 | 463 | 232 | 242 | 1 197 |
| **Working capital** | | | | | 2 500 | 386 | 2 886 |
| **Total** | 300 | 1 198 | 2 560 | 3 898 | 5 048 | 3 048 | 16 052 |

A depreciation schedule for the various project components is given in table 2. Most of the equipment will be depreciated over 10 years, which is the expected life of the plant. The only assets that will be replaced within the period are the rolling equipment (handling equipment, cars, trucks etc.). Contingencies are depreciated over a 15-year period to take account of the fact that they also partly concern civil work, which is depreciated over 20 years. The annual depreciation allowance for the project amounts to LS 1,107,000.

The residual value at the end of the project, that is, after 10 years of operation, is taken as 50% of the value of civil work and the full value of land and working capital, which are to be liquidated at cost in the last year.

Operating expenses

In his report, the technical specialist envisaged a gradual increase in the production programme of the plant. Full (but not capacity) production was to be reached by 1981, with 80% production in 1980, and 60% production in 1979.

In full production, the canning plant will use 9,000 tons of tomatoes, 300 tons of peas, 250 tons of beans and 230 tons of fruits. The value of these raw materials LS 2,285,500. Other materials such as salt and sugar will cost LS 354,700.

Tin-plate cans are another important item, and will cost LS 951,200 (to be paid in foreign exchange). The consumable and the maintenance charges are estimated at respectively LS 116,221 and LS 30,000. Finally the wages for 85 workers and professionals will be LS 745,200 per annum.

**Table 2. Depreciation, replacement and residual values**

| Items | Costs ('000 LS) | Expected lifetime from starting-up (Years) | Annual depreciation ('000 LS) | Years of depreciation | Replacement in 1984 ('000 LS) | Residual value ('000 LS) |
|---|---|---|---|---|---|---|
| **Fixed Assets** | | | | | | |
| Equipment installed | 6 281 | 1979 - 1988 | 628 | 1979 - 1988 | - | - |
| Land | 300 | not applicable | | | - | 300 |
| Buildings | 4 000 | 1979 - 1998 | 200 | 1979 - 1988 | - | 2 000 |
| Others | 600 | 1979 - 1983 | 120 | 1979 - 1983 | 600 | - |
| Preliminary expenses | 788 | 1979 - 1988 | 79 | 1979 - 1988 | - | 400 |
| Contingencies | 1 197 | 1979 - 1993 | 80 | 1979 - 1988 | - | - |
| Working capital | 2 886 | not depreciable | | | | 2 886 |
| Total | 16 052 | | 1 107 | | 600 | 5 586 |

The total operating costs at full production will thus be LS 5,530,000 (LS 4,424,000 at 80% production and LS 3,318,000 at 60%). Table 3 gives a summary of the operating costs broken down into fixed and variable expenses.

Table 3. Annual operating expenses
('000 LS)

| | Variable | Fixed | Total |
|---|---|---|---|
| Wages | - | 745 | 745 |
| Raw materials | 2 226 | - | 2 226 |
| Ancillary materials | 355 | - | 355 |
| Tin-plate cans | 951 | - | 951 |
| Consumables | 116 | - | 116 |
| Maintenance | - | 30 | 30 |
| Depreciation | - | 1 107 | 1 107 |
| Total | 3 648 | 1 882 | 5 530 |

## C. Financial analysis

### Financial estimates

Income and expenditures expected from the project are shown in the cash flow table 4. The operating life is taken as 10 years (as is customary in the industry), and construction is spread over 3 years. Fixed investment expenses are spread over the construction period. The working capital is constituted at the end of the construction period and the beginning of operations.

Table 4. Cash flows ('000 LS)

| Items | Construction | | | Production programme | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1976 | 1977 | 1978 | 1979 (60%) | 1980 (80%) | 1981 (100%) | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 |
| 1. Income | | | | 3 924 | 5 231 | 6 539 | 6 539 | 6 539 | 6 539 | 6 539 | 6 539 | 6 539 | 13 125 |
| Local sales | | | | 1 962 | 2 616 | 3 270 | 3 270 | 3 270 | 3 270 | 3 270 | 3 270 | 3 270 | 3 270 |
| Export sales | | | | 1 962 | 2 615 | 3 269 | 3 269 | 3 269 | 3 269 | 3 269 | 3 269 | 3 269 | 3 269 |
| Residual value | | | | | | | | | | | | | 6 586 |
| 2. Fixed investment | 1 498 | 6 458 | 5 210 | | | | | | 600 | | | | |
| Equipment installed | 1 159 | 2 286 | 1 836 | | | | | | | | | | |
| Land | 300 | | | | | | | | | | | | |
| Buildings | | 2 000 | 2 000 | | | | | | | | | | |
| Others | | 800 | 300 | | | | | | 600 | | | | |
| Preliminary expenses | 39 | 649 | 100 | | | | | | | | | | |
| Contingencies | | 723 | 474 | | | | | | | | | | |
| 3. Working capital | | | 1 732 | 577 | 577 | | | | | | | | |
| 4. Operating expenses | | | | 2 965 | 3 693 | 4 423 | 4 423 | 4 423 | 4 423 | 4 423 | 4 423 | 4 423 | 4 423 |
| Wages | | | | 745 | 745 | 745 | 745 | 745 | 745 | 745 | 745 | 745 | 745 |
| Raw materials | | | | 1 336 | 1 780 | 2 226 | 2 226 | 2 226 | 2 226 | 2 226 | 2 226 | 2 226 | 2 226 |
| Other materials | | | | 213 | 284 | 355 | 355 | 355 | 355 | 355 | 355 | 355 | 355 |
| Tin-plate cans | | | | 571 | 761 | 951 | 951 | 951 | 951 | 951 | 951 | 951 | 951 |
| Consumables | | | | 70 | 93 | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 |
| Maintenance | | | | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 |
| 5. Yearly cash flows (1 - (2 + 3 + 4)) | (1 498) | (6 458) | (5 210) | 382 | 961 | 2 116 | 2 116 | 2 116 | 1 516 | 2 116 | 2 116 | 2 116 | 8 702 |
| 6. Cumulative cash flows | (1 498) | (7 956) | (13 166) | (12 784) | (11 823) | (9 707) | (7 591) | (5 475 | (3 959) | (1 343) | 273 | 2 389 | 11 091 |
| 7. Financial sources | 1 498 | 6 458 | 5 210 | | | | | | | | | | |
| Foreign loan | | 1 617 | 1 616 | | | | | | | | | | |
| Local loan | 1 498 | 4 841 | 3 594 | | | | | | | | | | |
| 8. Financial obligation (foreign loan) | | | | 656 | 628 | 601 | 573 | 545 | 517 | 489 | | | |
| Repayment installments | | | | 462 | 462 | 462 | 462 | 462 | 462 | 461 | | | |
| Interest charges | | | | 194 | 166 | 139 | 111 | 83 | 55 | 28 | | | |
| 9. Net cash balance (5 + 7 - 8) | - | - | - | (274) | 333 | 1 15 | 543 | 1 571 | 999 | 1 627 | | | |

In the liquidation year, (1988), the residual value is treated as an income to be added to the sales receipts. Table 4 thus registers all the resources used and produced by the project. It thus shows the intrinsic value of the project. Since the Government, as the owner, assumes all expenses and collects all benefits, the cash flow provides a clear picture of what the Government can expect from the project. The yearly cash flows are positive from the first year of operation and the cumulative cash flows become positive in the eighth year of operation.

Profitability of the project

The present value of the project at 9% (which is the rate of interest prevailing in the Syrian Arab Republic) is negative and amounts to LS 469,000. Using a rate of interest of 8% one obtains a positive present value of LS 235,000. The exact internal rate of return (see table 5) is 8.42%.

It is worth noting that even in the full production programme the entire plant production capacity is not utilized. More output and therefore more income can be generated by extending the operating time of the factory. This means that the project could have a higher profitability by making better use of its productive capacity, high enough to exceed the 9% lending rate for industrial investment projects.

Uncertainty and risk

The pay-back period as shown by table 4 is little more than seven years, as the cumulative cash flow turns positive in the eighth year of operation. The pay-back period can be shortened if the production programme starts at a higher level than the proposed 60%. A 100% production programme implemented in the first year of operation would give a pay-back period of little more than four years.

The break-even point of the project is determined for a normal year of operation in which there is no renewal of investment. Data for the determination of the break-even point are taken from table 3. Variable costs include the cost of raw materials (mainly fresh vegetables and fruits, and

Table 5. Calculation of the internal rate of return
('000 LS)

| | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Yearly net cash flows | (1 498) | (6 458) | (5 210) | 332 | 961 | 2 116 | 2 116 | 2 116 | 1 516 | 2 116 | 2 116 | 2 116 | 8 702 |
| Discount factors at 9% | 0.958 | 0.879 | 0.806 | 0.740 | 0.679 | 0.623 | 0.571 | 0.524 | 0.481 | 0.441 | 0.405 | 0.371 | 0.341 |
| Present values of the net cash flows | (1 435) | (5 677) | (4 199) | 233 | 653 | 1 318 | 1 208 | 794 | 1 018 | 933 | 857 | 785 | 2 967 |
| Net present value of the project - 469 000 | | | | | | | | | | | | | |
| Discount factor at 8% | 0.962 | 0.391 | 0.325 | 0.764 | 0.707 | 0.655 | 0.607 | 0.562 | 0.520 | 0.431 | 0.446 | 0.413 | 0.332 |
| Present value of the net cash flows | (1 441) | (5 754) | (4 293) | 292 | 679 | 1 386 | 1 234 | 1 189 | 788 | 1 013 | 944 | 374 | 3 324 |
| Net present value of the project + 285 000 | | | | | | | | | | | | | |
| Internal rate of return: 3.42% | | | | | | | | | | | | | |

tin-plate cans), the cost of ancillary materials and the consumables. The fixed expenses comprise wages, maintenance and depreciation. The net receipts (excluding a 15% sale rebate) for a normal year of production amount to LS 6,539,000, broken down as follows:

| Item | Receipts (LS) | Percentage of receipts |
|---|---|---|
| Tomato concentrate | 4,079,703 | 62.0 |
| Peas and beans | 1,269,681 | 19.5 |
| Compotes and jams | 1,189,972 | 18.5 |
| Total | 6,539,356 | 100 |

A more detailed sales programme is given in table 6. The figure shows that the break-even point is reached at 39.5% of the production programme. This is a safe margin since, even if the plant cannot be supplied with peas, beans and fresh fruits, the project can break even by processing locally grown tomatoes, which provide 62% of the total receipts.

Financing

The project is financed partly by a supplier's credit granted by the Hungarian contractor and the rest by a loan from local sources. The supplier's credit amounts to LS 3,233,000 to be repaid in seven annual instalments starting one year after the delivery of equipment. The loan is made at 6% interest per annum.

The remaining financial requirements, that is LS 12,819,000, are covered by a loan provided by the Public Debt Fund.

In the cash flow table (table 4), only the foreign loan is shown. It is assumed that the delivery of equipment will be completed some time before the end of 1978. This means that the first instalment is due before the end of 1979 and should therefore be charged to this financial year. The last line of the cash flow shows a net positive cash balance after repayment of the supplier's credit including interest. The project can thus repay its foreign debts without facing any cash problem.

Table 6. Sales programme - year III (1981) with 100% production programme a/

| Products | ½-litre cans | | | 1-litre cans | | | 5-litre cans | | | Total value (LS) |
|---|---|---|---|---|---|---|---|---|---|---|
| | No. | Price (T.S) | Total (T.S) | No. | Price (LS) | Total (LS) | No. | Price (LS) | Total (LS) | |
| Tomato concentrate (36-38%) | 391 000 | 2.05 | 801 550 | 551 000 | 3.60 | 1 983 600 | 118 500 | 17.00 | 2 014 500 | 4 799 650 |
| Peas | 130 000 | 1.70 | 221 000 | 117 000 | 2.85 | 333 450 | 5 880 | 13.40 | 78 792 | 633 242 |
| Green beans | 93 000 | 1.25 | 116 250 | 85 000 | 2.00 | 170 000 | 4 500 | 9.40 | 42 300 | 328 550 |
| Broad beans | 158 000 | 1.15 | 181 700 | 130 000 | 2.00 | 260 000 | 9 500 | 9.50 | 90 250 | 531 950 |
| Compotes: | | | | | | | | | | |
| Cherries | 13 845 | 2.34 | 32 397 | 27 692 | 3.75 | 103 845 | - | - | - | 136 242 |
| Apricots | 9 230 | 1.87 | 17 260 | 18 461 | 3.00 | 55 383 | - | - | - | 72 643 |
| Peaches | 4 615 | 2.12 | 9 784 | 9 231 | 3.40 | 31 385 | - | - | - | 41 169 |
| Jam (confiture) | | | | | | | | | | |
| Apples | 19 765 | 2.25 | 44 471 | 28 000 | 4.00 | 112 000 | 5 882 | 18.80 | 11 058 | 167 529 |
| Pears | 19 765 | 3.43 | 67 794 | 28 000 | 5.50 | 154 000 | 5 882 | 25.85 | 152 050 | 373 844 |
| Quince | 19 765 | 1.75 | 34 589 | 28 000 | 4.50 | 126 000 | 5 882 | 19.40 | 114 111 | 274 700 |
| Figs | 24 705 | 2.25 | 55 586 | 35 000 | 4.00 | 140 000 | 7 354 | 18.80 | 138 255 | 333 841 |
| Total | 883 690 | | | 1 057 384 | | | 163 380 | | | 7 693 360 |
| | | | | | | | | 15% retail rebate | | 1 154 004 |
| | | | | | | | | Grand total | | 6 539 356 |

a/ Prices of some can sizes are calculated on the basis of other sizes which were known. All prices based on 1976 data.

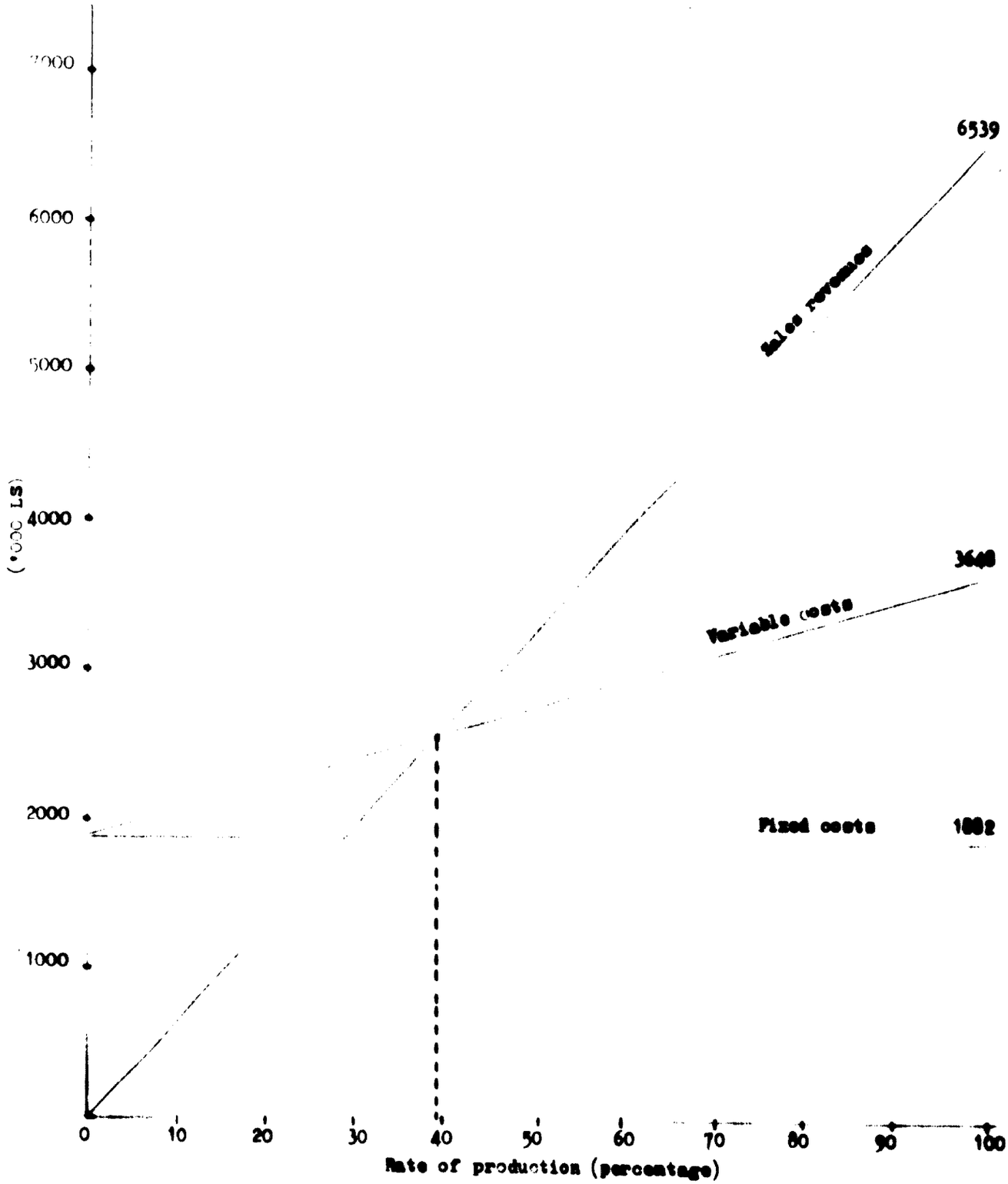


Figure. Break-even point for third year of operation of fruit and vegetable canning plant, Hasakeh

As the Syrian Government is the sole owner of the plant, any cash surplus is paid back to the Public Debt Fund to cover the principal and interest of the local loan granted to the project.

## D. Socio-economic aspects

The socio-economic contributions of the project to the economy can be evaluated from the following aspects: net national value added; income distribution effect; and net foreign exchange effect.

### National value added

The value added generated by the project is the difference between the value of its output and the value of the material inputs used, including capital and current material inputs.

In the calculation of the value added no adjustment has been made to the foreign rate of exchange. The official rate of exchange in August 1977 was LS 3.90 to the $1.00, and the unofficial one was about LS 4.00 or slightly more to $1.00. The difference between the rates is thus negligible: no adjustment is needed to the foreign components of the value added. Moreover, it does not appear that the adjusted rate of exchange has been used as a national parameter by the State Planning Commission or by any other official body.

Furthermore, it was not possible to obtain a social rate of discount for discounting the nominal annual values of the net national value added. A 9% social rate has been adopted throughout the analysis because it is at this rate that most industrial projects are financed from the Public Debt Fund. This rate is comparable to the interest rates generally used in the world capital market, in supplier's credits, Eurodollar financing or World Bank loans. It is expected that the Syrian Arab Republic will finance most of its future industrial projects at a rate close to the one prevailing in the international capital market.

Table 7 provides the data necessary for the assessment of the project's contribution to the economy in terms of value added at market price and distribution of income in the Hasakeh area.

Table 7. Value added analysis (at market price) ('000 LS)

| Items | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Value of output | - | - | - | 3 924 | 5 231 | 6 539 | 6 539 | 6 539 | 6 539 | 6 539 | 6 539 | 6 539 | 13 125 |
| Domestically marketed | - | - | - | 1 962 | 2 616 | 3 270 | 3 270 | 3 270 | 3 270 | 3 270 | 3 270 | 3 270 | 3 270 |
| Exports | - | - | - | 1 962 | 2 615 | 3 269 | 3 269 | 3 269 | 3 269 | 3 269 | 3 269 | 3 269 | 3 269 |
| Residual value | - | - | - | - | - | - | - | - | - | - | - | - | 6 586 |
| 2. Material inputs | 1 498 | 6 458 | 8 096 | 2 220 | 2 948 | 3 678 | 3 678 | 3 678 | 3 678 | 3 678 | 3 678 | 3 678 | 3 678 |
| Investment | 1 498 | 6 458 | 8 096 | - | - | - | - | - | - | - | - | - | - |
| Imported | 1 198 | 3 898 | 3 048 | - | - | - | - | - | - | - | - | - | - |
| Domestically procured | 300 | 2 560 | 5 048 | - | - | - | - | - | - | - | - | - | - |
| Current material inputs | - | - | - | 2 220 | 2 948 | 3 678 | 3 678 | 3 678 | 3 678 | 3 678 | 3 678 | 3 678 | 3 678 |
| Imported | - | - | - | 571 | 761 | 951 | 951 | 951 | 951 | 951 | 951 | 951 | 951 |
| Domestically procured | - | - | - | 1 549 | 2 064 | 2 581 | 2 581 | 2 581 | 2 581 | 2 581 | 2 581 | 2 581 | 2 581 |
| Infrastructural services | - | - | - | 100 | 123 | 146 | 146 | 146 | 146 | 146 | 146 | 146 | 146 |
| 3. Net domestic value added (1-2 ) | (1 498) | (6 458) | (8 096) | 1 704 | 2 283 | 2 861 | 2 861 | 2 861 | 2 861 | 2 861 | 2 861 | 2 861 | 9 447 |
| 4. Repatriated payments | - | - | - | 194 | 166 | 139 | 111 | 83 | 55 | 28 | - | - | - |
| Interest | - | - | - | 194 | 166 | 139 | 111 | 83 | 55 | 28 | - | - | - |
| 5. Net national value added ( 3-4 ) | (1 498) | (6 458) | (8 096) | 1 510 | 2 117 | 2 722 | 2 750 | 2 778 | 2 806 | 2 833 | 2 861 | 2 861 | 9 447 |
| Wages | - | - | - | 745 | 745 | 745 | 745 | 745 | 745 | 745 | 745 | 745 | 745 |
| Social surplus | - | - | - | 765 | 1 372 | 1 977 | 2 005 | 2 033 | 2 061 | 2 088 | 2 116 | 2 116 | 8 702 |
| Discounting factors at the social rate of discount | 0.958 | 0.879 | 0.806 | 0.740 | 0.679 | 0.623 | 0.571 | 0.524 | 0.481 | 0.441 | 0.405 | 0.371 | 0.341 |
| Discounted values of the net national value added | (1 435) | (5 677) | (6 525) | 1 117 | 1 437 | 1 696 | 1 570 | 1 456 | 1 350 | 1 249 | 1 159 | 1 061 | 3 221 |

Absolute efficiency test. With an annual turnover of LS 6,539,000 the project has a net domestic added value for a normal year of operation (in 1981) of LS 2,861,000. This amount covers the wages and leaves a social surplus of LS 1,977,000. Even after repatriating the interest on foreign loans, the net national value added remains considerable and amounts to LS 2,722,000. The project, therefore, passes the absolute efficiency test.

Relative efficiency test. The relative efficiency test determines how much value added is generated by one unit of investment. For this purpose the discounted net national value added generated by the project throughout its life is divided by the discounted value of all investments made during the same period.

$$\frac{\text{Discounted values added}}{\text{Discounted investments}} = \frac{15,316,000}{13,637,000} = \underline{1.12}.$$

This means that a unit of investment in fixed capital, when discounted to the present value, generates more than one unit of discounted net national value added. It is a high ratio, which makes the project very attractive and profitable to the national economy. Such a result is expected because the project would use a large amount of national resources (raw materials, labour etc.) for a relatively small investment.

## Distribution effect

The distribution of the net value added is broken down in table 8. The net value added generated by the canning plant in normal operation is LS 1,615,000. The share of the wage earners is LS 745,000, an increase in the revenues of the population of the Hasaksh area. The Government will get a little more, LS 870,000, in the form of profit, taxes and interest on loans.

## Net foreign exchange effect

Table 9 gives information on the project's foreign exchange situation throughout its life. It indicates that the canning project will have negative net foreign exchange flows over the construction period because the supplier's credit covers only one part of the imported equipment.

However, from the first year of operation, the project's foreign exchange flow is positive and remains so throughout the project's life. This is because half of the output will be exported.

By discounting the annual net foreign exchange flow at the social rate of discount, the present value of the net foreign exchange effect is found to be LS 4 million. This means that the implementation of the project will bring enough foreign exchange to cover the foreign loan and the cost of imported materials and still leave a surplus.

Table 8. Distribution of the net national value added

| Item | '000 LS |
|---|---|
| Output | 6 539 |
| Domestically marketed | 3 270 |
| Exports | 3 269 |
| Inputs | 4 785 |
| Investment (depreciation) | 1 107 |
| Current material inputs | 3 678 |
| Imported | 951 |
| Domestic | 2 581 |
| Infrastructural services | 146 |
| Net domestic value added | 1 754 |
| Repatriated repayments | 139 |
| Interest | 139 |
| Net national value added | 1 615 |
| Wages | 745 |
| Government revenues (profit, taxes and interest on domestic loans) | 870 |

Table 9. Foreign-exchange effect
('000 LS)

| Items | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| I. Foreign exchange inflow | - | 1 617 | 1 616 | 1 962 | 2 615 | 3 269 | 3 269 | 3 269 | 3 269 | 3 269 | 3 269 | 3 269 | 3 269 |
| Exports | - | - | - | 1 962 | 2 615 | 3 269 | 3 269 | 3 269 | 3 269 | 3 269 | 3 269 | 3 269 | 3 269 |
| Foreign loan | - | 1 617 | 1 616 | - | - | - | - | - | - | - | - | - | - |
| II. Foreign exchange outflow | 1 198 | 3 898 | 2 662 | 1 227 | 1 389 | 1 528 | 1 524 | 1 496 | 1 466 | 1 440 | 951 | 951 | 951 |
| Imported equipment | 1 198 | 3 898 | 2 662 | - | - | - | - | - | - | - | - | - | - |
| Imported current materials | - | - | - | 571 | 761 | 951 | 951 | 951 | 951 | 951 | 951 | 951 | 951 |
| Repayment of foreign loan | - | - | - | 462 | 462 | 462 | 462 | 462 | 462 | 461 | - | - | - |
| Interest on foreign loan | - | - | - | 194 | 166 | 139 | 111 | 83 | 55 | 28 | - | - | - |
| III. Net foreign exchange effect (I-II) | (1 198) | (2 281) | (1 046) | 735 | 1 226 | 1 741 | 1 745 | 1 773 | 1 803 | 1 829 | 2 318 | 2 318 | 2 318 |
| Discounting factors at the social rate of discount 9% | 0.958 | 0.879 | 0.806 | 0.740 | 0.679 | 0.623 | 0.571 | 0.524 | 0.481 | 0.441 | 0.405 | 0.371 | 0.341 |
| Discounted values of the net foreign exchange effect | (1 148) | (2 005) | (843) | 544 | 832 | 1 085 | 996 | 929 | 867 | 807 | 939 | 860 | 790 |

## II. CONCLUSIONS AND RECOMMENDATIONS

### A. Conclusions

The financial analysis shows that the internal rate of return of the project (8.42%) is lower than the rate of interest charged on local borrowing but is higher than the rate applied to foreign loans (6%). Since the rate of interest on the supplier's credit is lower than the one on domestic financing there is a leverage effect, which brings down the interest paid on the entire borrowing. The average rate is estimated at 8.4%. Since this rate is equal to the internal rate of return, the project will be able to repay all the loans it has received.

The financial performance would greatly improve if the productive capacity of the project were used more extensively by processing additional vegetables and fruits. It has been proposed, for instance, that 300 tons per year of green peas should be processed at a later date. However, it is not certain that such a quantity of raw material is available.

From the socio-economic standpoint the project contribution to the national economy is also positive. There will be a considerable increase of income in Hasakeh. The project will encourage local farmers to increase their growing of vegetables and fruits in order to sell them to the new canning plant. The project will also have a beneficial effect on the country's balance of payments, if half of the output is exported.

### B. Recommendations

#### Raw materials

Measures should be taken to ensure a steady supply of fresh vegetables and fruits to the canning plant. Only tomatoes seem to be available in the vicinity of the plant, but there is no information about other raw materials. The supply of fresh fruits and vegetables should be spread over as long a period as possible in order to ensure the extended use of the plant's productive capacitiy. To this effect, a study should be made of the types, qualities and quantities of the various vegetables and fruits that can be grown in the Hasakeh area.

Marketing study

The financial and economic analysis assumed that half of the canning plant output would be exported. A thorough marketing study should be made as soon as possible to assess the potential markets for canned fruits and vegetables, particularly in countries neighbouring the Syrian Arab Republic.

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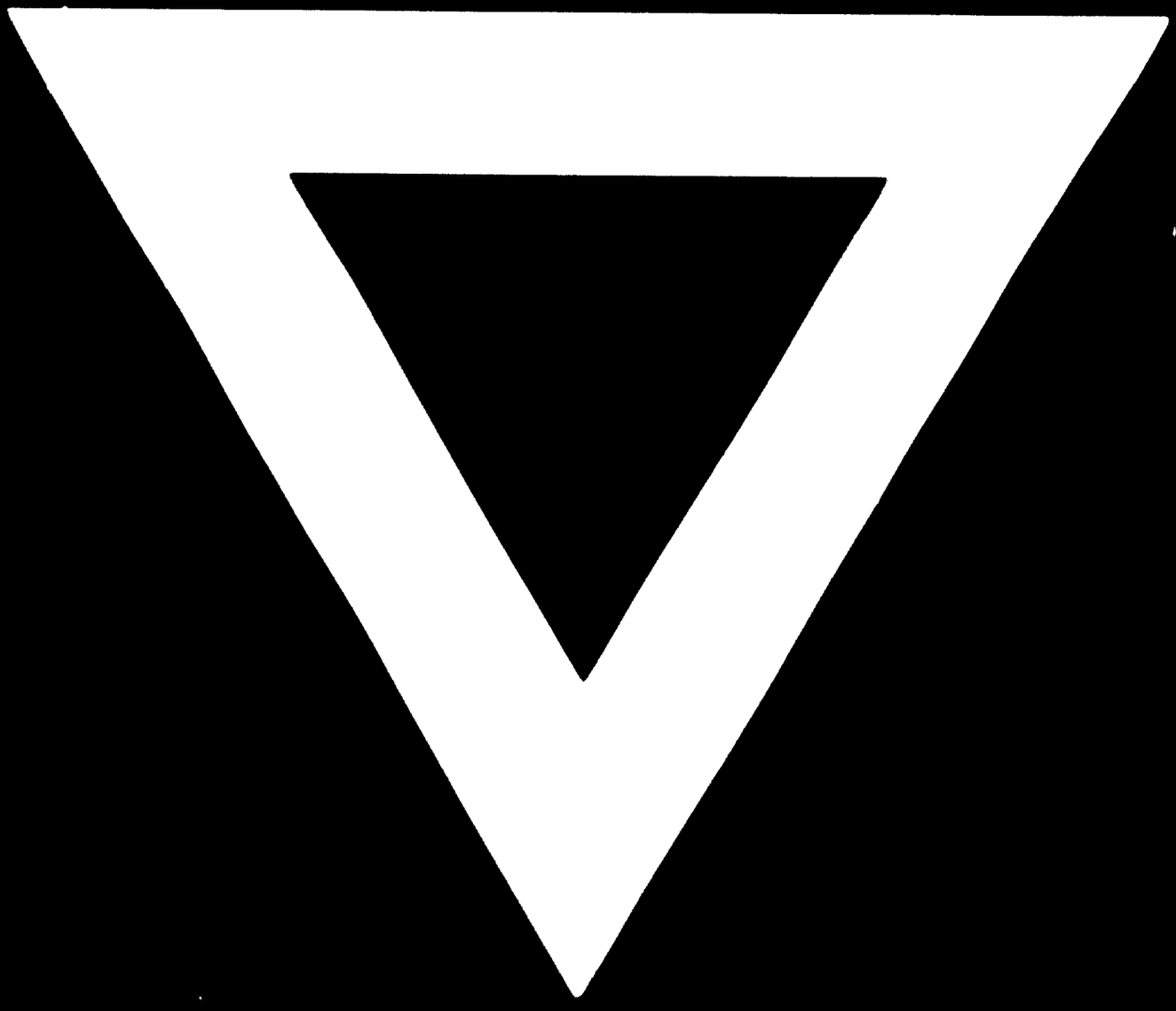

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