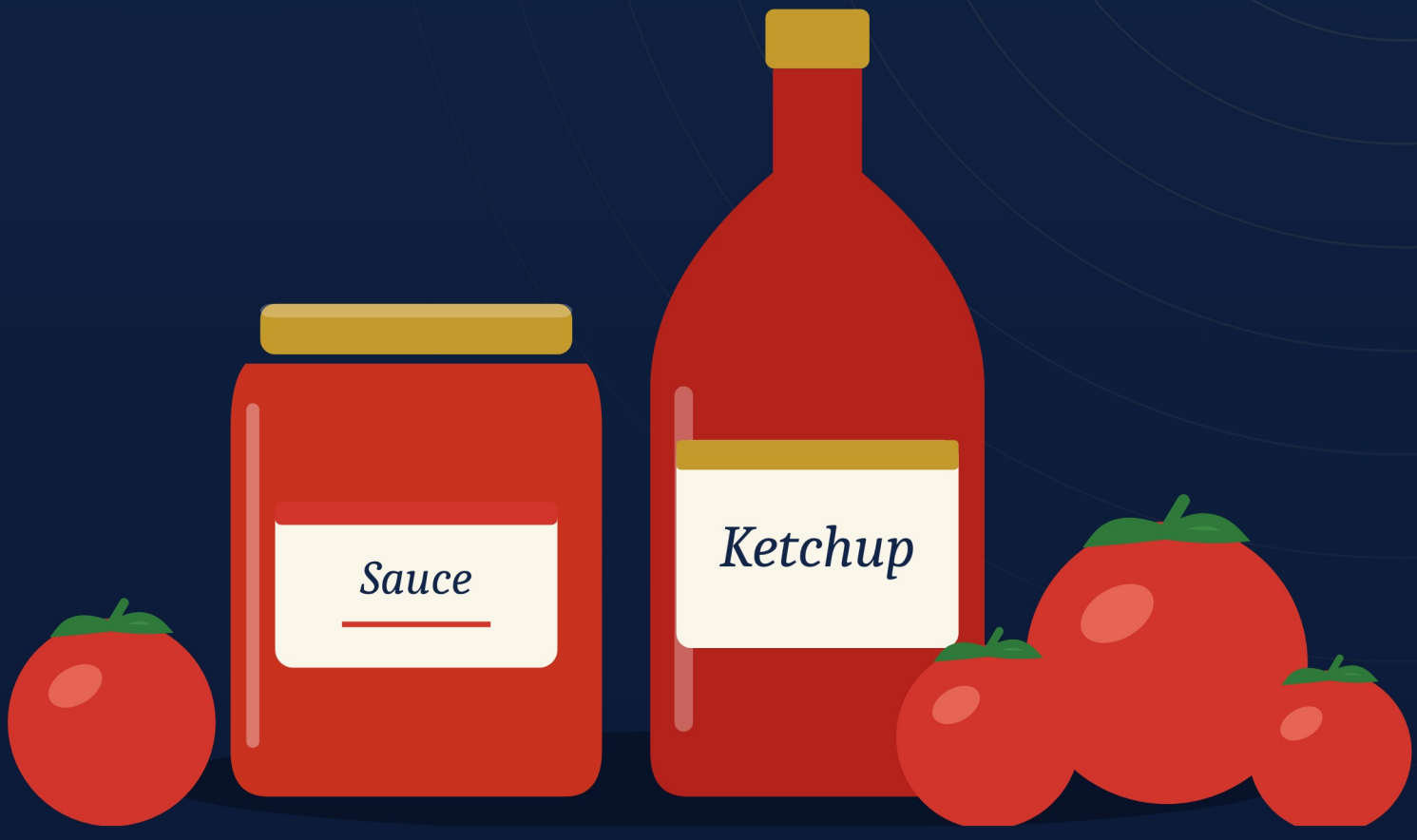
PROJECT FEASIBILITY STUDY · ETHIOPIA

Tomato Sauce and Ketchup Manufacturing Plant

Feasibility Study

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A 600-tonne-per-year tomato sauce and ketchup processing plant in Addis Ababa, Ethiopia



600 t/yr	18.6%	4.5 yrs	34
Plant capacity	Internal rate of return	Payback period	Jobs created

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1 Executive Summary

This study assesses the establishment of a plant producing 600 tonnes a year of tomato sauce (450 tonnes) and tomato ketchup (150 tonnes) in Addis Ababa. Ketchup is used mainly as a table condiment, while tomato sauce is used for colouring, seasoning and soup preparation and to reduce the amount of ground hot pepper in traditional wot without losing its red colour.

Demand is met by domestic production and imports. The present (2012) effective demand is estimated at 8,799 tonnes and is projected to reach 12,481 tonnes by 2018 and 15,757 tonnes by 2022. With existing domestic production estimated at 7,591 tonnes, the unsatisfied demand grows from 1,736 tonnes in 2013 to 8,166 tonnes in 2022.

The principal raw material is fresh, fully ripe tomato, supplied by growers in the Central Rift Valley; salt, sugar, vinegar and spices are also available locally. Laminated cans are the only imported input.

The total investment cost, including working capital, is Birr 24.51 million, of which Birr 9.89 million (40.3%) is required in foreign currency. The project is financially viable: the IRR is 18.6% and the NPV at a 10% discount rate is Birr 10.24 million. The plant will employ 34 people.

Table 1.1: Project at a glance

Item	Description
Products	Tomato sauce (450 t/yr) and tomato ketchup (150 t/yr) in glass bottles and cans
Location	Industrial zone, Addis Ababa
Plant capacity	600 tonnes per year (2 t/day per shift basis, 300 days)
Production programme	75% of capacity in the first operating year, 85% in the second, 100% thereafter
Main raw materials	Fresh tomatoes (2,500 t/yr), salt, sugar, vinegar, spices
Land / built-up area	1,400 m² / 700 m²
Employment	34 persons
Total investment	Birr 24.51 million (fixed investment Birr 16.80 million)
Financing	30% equity, 70% bank loan at 10%
Price base	Constant 2012 prices, Ethiopian Birr

Table 1.2: Key financial indicators

Indicator	Value
Annual sales at full capacity	Birr 28.23 million
Annual production cost at full capacity	Birr 26.83 million
Internal rate of return (IRR)	18.6%
NPV at 10% discount rate	Birr 10.24 million
NPV at 18% discount rate	Birr 0.51 million
Payback period	About 4.5 years from start of operation
Break-even sales (full-capacity year)	77.7% of sales (30.1% on a cash basis)
Corporate income tax over project life	Birr 9.03 million

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Table 3.3: Projected demand for tomato sauce and ketchup, 2013–2022 (tonnes)

Year	Projected demand	Existing production	Unsatisfied demand
2013	9,327	7,591	1,736
2014	9,886	7,591	2,295
2015	10,479	7,591	2,888
2016	11,108	7,591	3,517
2017	11,775	7,591	4,184
2018	12,481	7,591	4,890
2019	13,230	7,591	5,639
2020	14,024	7,591	6,433
2021	14,865	7,591	7,274
2022	15,757	7,591	8,166

Source: Study projections.

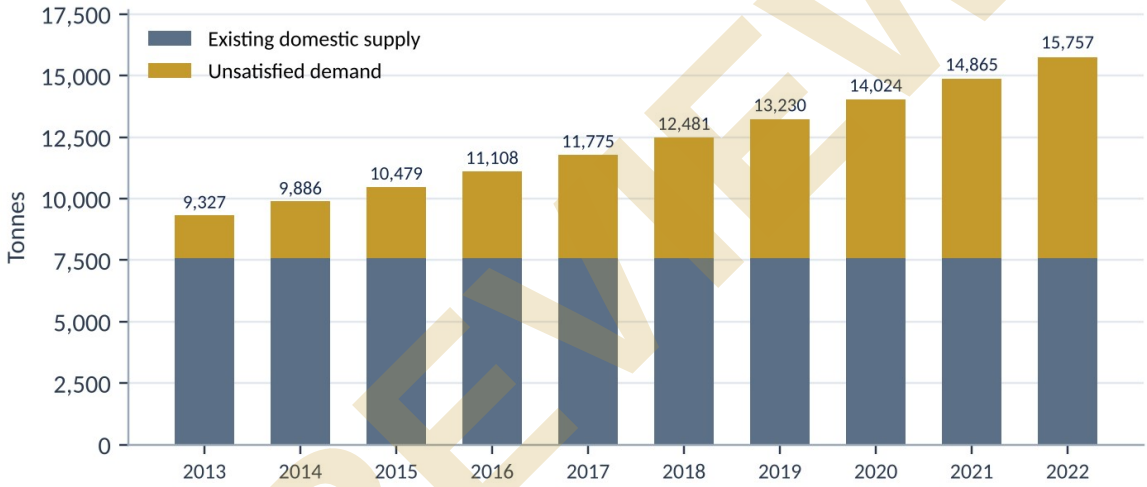


Figure 3.3: Projected demand, existing supply and unsatisfied demand, 2013–2022

Source: Table 3.3.

3.3 Pricing and Distribution

Locally produced tomato sauce retails at Birr 50 per 850 g, or Birr 58.82 per kg (Birr 58,820 per tonne). Allowing a 25% margin for distributors, a factory-gate price of Birr 47,056 per tonne is adopted.

Experienced food wholesalers can be appointed to distribute the products. Households and the hospitality industry buy them through general retail shops and supermarkets.

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6 Technology and Engineering

6.1 Production Process

The main operations are washing, crushing, concentrating, homogenising, flavouring, bottling or canning, packing and dispatch (Figure 6.1).

- Washing: incoming tomatoes are washed using a technique that preserves the fresh, natural qualities of the ripe fruit.
- Crushing: the washed tomatoes are crushed into pulp (juice), which is strained and filtered.
- Concentration: the pulp is pre-heated and concentrated to about one-third of its original volume in a continuous concentrator supplied with steam from the boiler. Concentration must be very rapid; prolonged heating oxidises the pulp and gives it a disagreeable dark-red colour.
- Homogenisation: the concentrated pulp is homogenised.
- Flavouring: salt, sugar, spices, vinegar and other ingredients are added in the seasoning room.
- Bottling or canning, packing and dispatch: the products are filled into bottles and cans, packed in cartons and dispatched.

Recipes for ketchup differ considerably from those for sauce. For ketchup, spices are added to the vinegar and cooked at about 85 °C in a covered kettle for two to three hours; onion, garlic and paprika are then added directly to the ketchup.



Figure 6.1: Tomato sauce and ketchup production process

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8.4.5 Net Present Value

Net present value (NPV) is the sum of the project's net cash flows discounted to Year 1. At the base-case discount rate of 10%, the NPV is Birr 10.24 million. Table 8.4 shows the NPV at higher discount rates, which reflect the higher cost of capital prevailing in the Ethiopian market.

Table 8.4: Net present value at alternative discount rates

Discount rate	NPV (Birr '000)	Result
10% (base case)	10,242	Positive
15%	3,562	Positive
18%	514	Positive

Source: Calculated from the net cash flows in Table A.5.

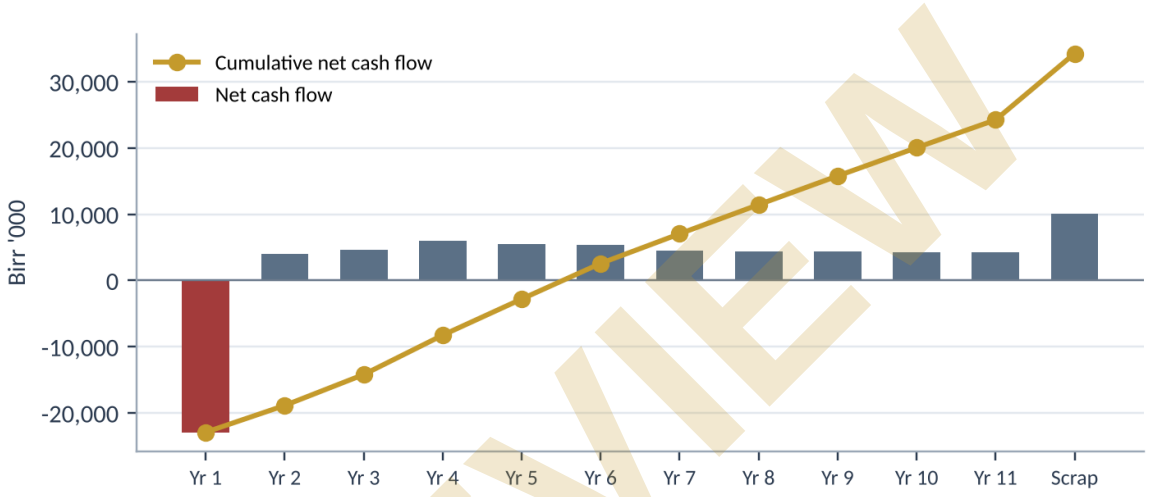


Figure 8.2: Net cash flow and cumulative net cash flow over the project life

Source: Table A.5.

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