PROJECT FEASIBILITY STUDY · ETHIOPIA

Peanut Butter Manufacturing Plant

Feasibility Study

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A 100-tonne-per-year peanut butter processing plant in Addis Ababa, Ethiopia



100 t/yr	30.6%	2.9 yrs	31
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 100 tonnes of peanut butter per year in Addis Ababa. Peanut butter is a nutritious spread containing protein, fat and carbohydrate, consumed mainly by middle- and higher-income urban households and used in sandwiches, confectionery and bakery products.

Domestic demand is met by local production and a small volume of imports. The present effective demand for domestic consumption and export is estimated at 1,048 tonnes and is projected to reach 1,356 tonnes by 2017 and 1,755 tonnes by 2022. With existing domestic production of about 982 tonnes, the unsatisfied demand grows from 120 tonnes in 2013 to 773 tonnes in 2022.

The principal raw materials are groundnuts, salt, sugar, emulsifier, preservatives, antioxidants and other additives. Groundnuts, salt and sugar are available locally; preservatives and additives are imported.

The total investment cost, including working capital, is Birr 5.32 million, of which Birr 1.84 million (34.6%) is required in foreign currency. The project is financially viable: the IRR is 30.6% and the NPV at a 10% discount rate is Birr 5.06 million, and the NPV remains positive at 18%. The plant will employ 31 people.

Table 1.1: Project at a glance

Item	Description
Product	Smooth peanut butter in consumer packs
Location	Industrial zone, Addis Ababa
Plant capacity	100 tonnes per year (single 8-hour shift, 300 days)
Production programme	90% of capacity in the first operating year, 100% thereafter
Main raw materials	Groundnuts (142 t/yr), sugar, salt, emulsifier, preservatives, antioxidants
Land / built-up area	450 m² / 240 m²
Employment	31 persons
Total investment	Birr 5.32 million (fixed investment Birr 4.04 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 4.30 million
Annual production cost at full capacity	Birr 3.56 million
Internal rate of return (IRR)	30.6%
NPV at 10% discount rate	Birr 5.06 million
NPV at 18% discount rate	Birr 2.36 million
Payback period	About 2.9 years from start of operation
Break-even sales (full-capacity year)	64.2% of sales (30.6% on a cash basis)
Corporate income tax over project life	Birr 3.00 million

Beyond its financial return, the project substitutes imports and adds export potential, creates backward linkages with groundnut farmers and the sugar and salt industries, and generates income tax and payroll tax revenue for the Government.

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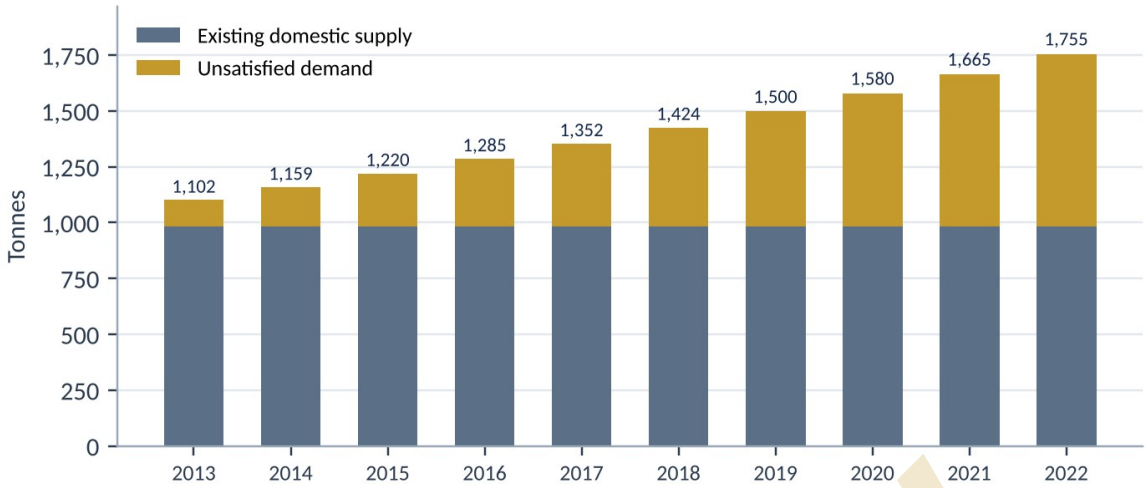


Figure 3.2: Projected demand, existing supply and unsatisfied demand, 2013–2022

Source: Table 3.2.

Unsatisfied demand rises from 120 tonnes in 2013 to 442 tonnes in 2018 and 773 tonnes in 2022. Export demand grows from 23 tonnes in 2013 to 81 tonnes in 2022.

3.3 Pricing and Distribution

The average retail price of peanut butter is about Birr 56 per kg. Allowing a 30% margin for distributors and retailers, a factory-gate price of Birr 43 per kg is adopted.

Peanut butter is a consumer product bought mainly by middle- and higher-income urban households. The plant should appoint distributors in selected towns, through whom the product will reach consumers via supermarkets and general merchandise shops.

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6 Technology and Engineering

6.1 Production Process

Peanut butter production involves decorticating, roasting, blanching, grinding, blending, paste forming and packing (Figure 6.1).

- Decorticating: shells are removed from the incoming groundnuts in a decorticating machine.
- Roasting: the shelled nuts are heated to about 145 °C to develop the characteristic roasted flavour; roasting time is controlled to achieve the required flavour and colour.
- Blanching: the roasted nuts are cooled and blanched to remove the skins.
- Grinding and blending: the nuts are coarsely ground, the ingredients are added and blended, and the oil level is controlled at about 3% by holding the mix at a low temperature.
- Fine grinding: final grinding at a controlled temperature produces a smooth, creamy paste.
- De-aeration and packing: air is removed under vacuum, the paste is cooled and filled by a vacuum-fill packing unit.

The premises where peanut butter is manufactured, packed, stored and distributed, and all processing equipment, must be kept under strict hygienic conditions.

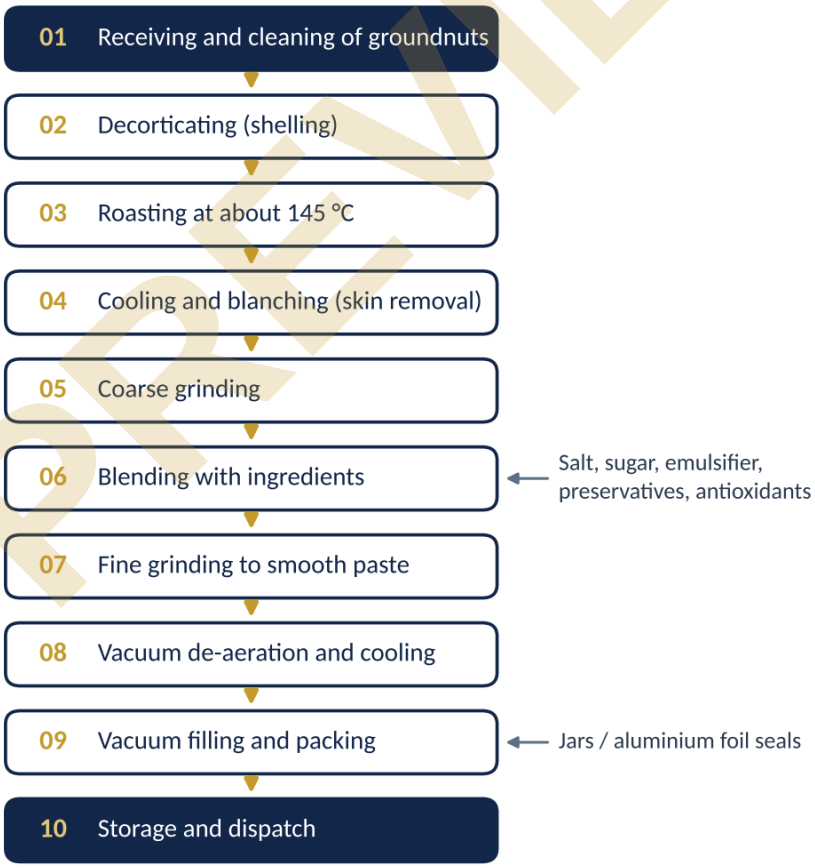


Figure 6.1: Peanut butter production process

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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 5.06 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)	5,064	Positive
15%	3,214	Positive
18%	2,357	Positive

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

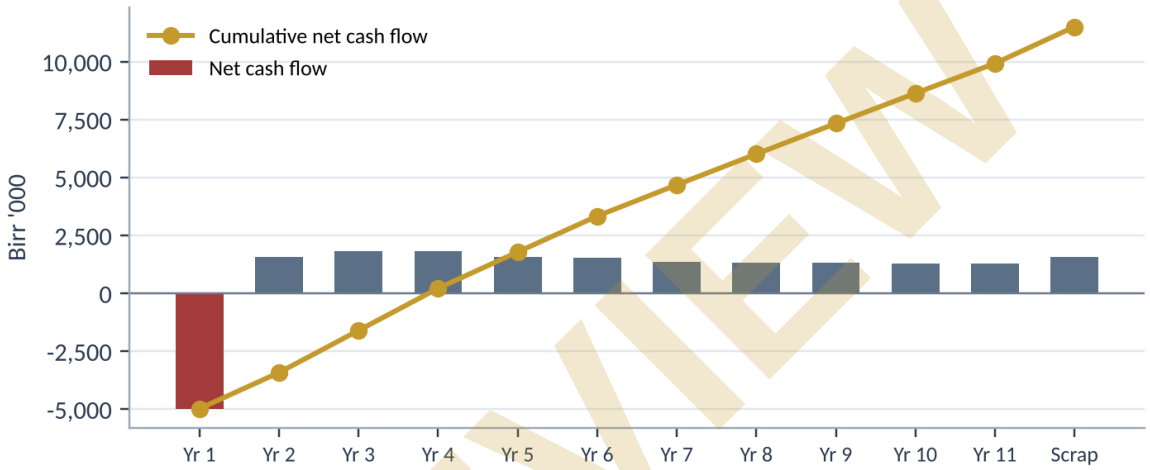


Figure 8.2: Net cash flow and cumulative net cash flow over the project life

Source: Table A.5.

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